

The wargame package

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Abstract

This package provides tools to typesetting manuals, board, and counters for wargames using L^AT_EX. Licensed under [Creative Commons Attribution-ShareAlike International License, version 4](#) ©©©.

Contents

1	Introduction	4
2	Hex Boards	4
2.1	Placing hexes	4
2.2	Hex bevels	6
2.3	Styling hexes	6
2.4	Hex coordinate system	7
2.5	Terrains	9
2.5.1	Styling terrains	10
2.6	Ridges	10
2.6.1	Styling ridges	10
2.7	Labels	10

2.7.1	Styling labels	14
2.8	Towns	14
2.8.1	Styling towns	15
2.9	Extra graphics for hexes	15
2.10	Rivers, borders, and roads	15
2.10.1	Styling paths	17
2.11	Board clipping and frame	17
2.12	Constructing the physical board	19
2.12.1	Split the board over multiple sheets	20
2.12.2	Foldable board	21
3	Chits	22
3.1	Styling chits	23
3.2	Defining preset chit types	24
3.3	Kriegspiel chits	24
4	NATO App 6(c) symbols	27
4.1	Faction and Command Selection	28
4.2	Unit Size (echelon)	30
4.3	Unit type identification	30
5	Implementation	30
5.1	The <code>wargame</code> package	30
5.2	The <code>wargame.util</code> TikZ library	33
5.2.1	Miscellaneous macros	33
5.2.2	Pictures in compound nodes	35
5.2.3	Nodes in compound nodes	37
5.2.4	Bounding boxes	39
5.2.5	Some utilities to get bounding boxes and the like	40
5.2.6	Other Tikz utilities	42
5.2.7	Random IDs	45
5.2.8	VASSAL icons	45
5.3	The <code>wgexport</code> class	47
5.3.1	Making dice	59
5.3.2	Hooks into chits, etc.	60
5.4	The <code>wargame.hex</code> TikZ library	62
5.4.1	Debugging	63

5.4.2	Suppress terrain pictures	63
5.4.3	Hex coordinate system	63
5.4.4	Hexes	68
5.4.5	Terrain	75
5.4.6	Ridges	300
5.4.7	Towns	303
5.4.8	Labels	304
5.4.9	Extra graphics	307
5.4.10	Some macros	307
5.4.11	Edges, borders, roads, rivers, and so on	308
5.4.12	Other paths	311
5.4.13	Move, attacks, retreats from hex to hex	311
5.4.14	Board clipping and frame	315
5.4.15	Board splitting	321
5.5	The <code>wargame.chit</code> <i>TikZ</i> library	329
5.5.1	Debugging	329
5.5.2	The <code>chit</code> key namespace	330
5.5.3	The <code>chit</code> styles	332
5.5.4	The <code>\chit</code> shape	332
5.5.5	The <code>\chit</code> wrapper macro	340
5.5.6	The Kriegspiel option for chits	341
5.5.7	Predefined <code>chit</code> element pictures	343
5.5.8	Modifications to chits	345
5.5.9	Stacking of chits	345
5.5.10	Making order of battle charts	346
5.5.11	Table of chits	352
5.5.12	Battle markers	359
5.5.13	Dice	360
5.5.14	Some utilities	366
5.6	The <code>wargame.natoapp6c</code> <i>TikZ</i> library	368
5.6.1	Debugging	368
5.6.2	Colours	369
5.6.3	Some dimensions	369
5.6.4	Some utilities	370
5.6.5	Faction names as macros	371
5.6.6	Node shapes	371

5.6.7	‘Friendly’ node shapes	372
5.6.8	‘Hostile’ node shapes	381
5.6.9	‘Neutral’ node shapes	389
5.6.10	‘Unknown’ node shapes	396
5.6.11	Echelons	405
5.6.12	Text on symbols	407
5.6.13	Text <code>natoapp6c</code> namespace	407
5.6.14	The <code>natoapp6c</code> styles	410
5.6.15	The <code>\natoapp6c</code> shape	411
5.6.16	The <code>\natoapp</code> wrapper macro	416
5.6.17	Kriegspiel-like symbols	417
5.6.18	Macros for markings	419
5.6.19	Utility macros used in the symbols	420
5.6.20	Symbols used when defining weaponry	421
5.6.21	The symbols	423
5.6.22	Some extra MIL-STD symbols	471
5.6.23	Some Kriegspiel-like symbols	471
A	Generate draft VASSAL module	477
A.1	Example	478

1 Introduction

This package provides tools for typesetting classic, hex-based wargames. The package allows an author to design a board, or map, comprised of hex, using a relatively simple interface. Units are typeset using a similar interface. Unit types are identified using the NATO Joint Military Symbology [2] standard.

This document is meant as a reference manual (although far from complete). A separate tutorial is available, and may be the best starting point.

2 Hex Boards

The package provides a number of facilities to set-up a board comprised of hexagon fields (“hexes”).

2.1 Placing hexes

A hex can be added to the current `tikzpicture` using the macro `\hex`. It takes up to 4 arguments

```
\hex[⟨key-value-pairs⟩](⟨location⟩)(⟨name⟩)
```

The *⟨key-value-pairs⟩* specify the hex. Valid options are

`terrain=⟨terrain-keys⟩` specifies the terrain of the hex. More on in this in Section 2.5.

`ridges=⟨ridges-keys⟩` specifies where ridges are drawn in the hex. Section 2.6.

`label=⟨label-keys⟩` specifies the how to output the hex label, if any. This is expanded upon in Section 2.7.

`town=⟨town-keys⟩` specifies that a town (or similar) is present in the hex. The various keys are described in Section 2.8.

`bevel=⟨bevel-keys⟩` specifies that a bevel should be added to the hex. The various keys are described in Section 2.2.

`extra=⟨extra-keyx⟩` and `extra clipped=⟨extra-keyx⟩` allows the user to put custom graphics in the hexes. See also Section 2.9 for more.

`row=⟨row⟩` and `column=⟨column⟩` Keys to set hex coordinates. Mainly used when using `\node` rather than `\hex`. These coordinates should be specified in the `hex cs` coordinate system (Section 2.4).

any style key defined for TikZ pictures.

The *⟨location⟩* argument specifies the coordinates, in the hex coordinate system where to put the hex. More about the coordinate system is given in Section 2.4. Note, the numbers by default starts from the lower-left corner, but can be changed via options.

The elements are rendered in the following order

1. The terrain, clipped to the hex shape.
2. The hex, including circumference and fill
3. The ridges, if any
4. The label, if any
5. Extra graphics clipped to the hex
6. Bevel if selected
7. Town, if any
8. Extra graphics which may extend beyond the confines of the hex.

Figure 1 illustrates some of the components of a hex. The hexes are 2 unit lengths wide. Typically, the unit length is one centimetre, which means the hexes are roughly $2\text{ cm} \times 1.86\text{ cmm}$ — or roughly $3/4'' \times 3/4''$ — big. This allows the hexes to fit chits (see Section ??) of size $12\text{ mm} \times 12\text{ mm}$ — or roughly $1/2'' \times 1/2''$ — nicely. If one wants larger chits or hexes one should take care to scale both by a similar amount.

Note that the macro `\hex` is really a short hand for TikZ's `\node` macro, but with preset options. An alternative to using the `\hex` macro is to do

```
\node[hex={⟨key-value-pairs⟩}] (⟨name⟩) at (⟨location⟩);
```

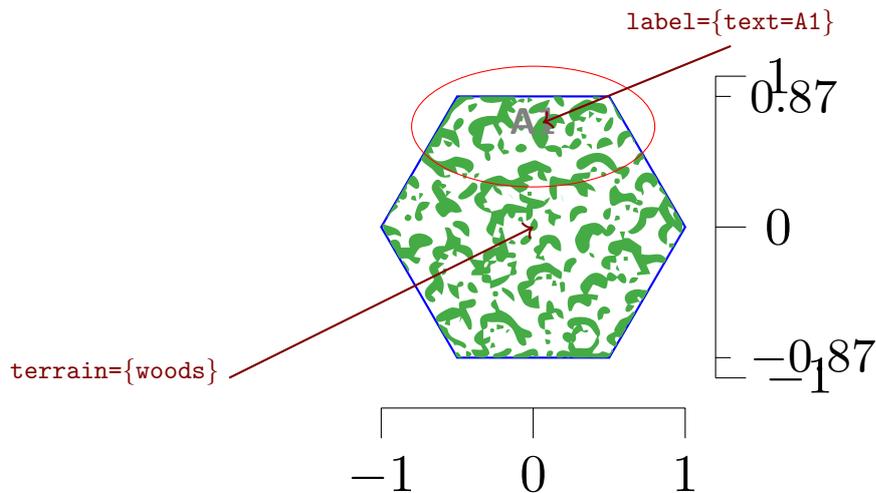


Figure 1: Hex parts. The bar on the bottom and to the right indicate two units of length.

This can be useful when placing explanatory graphics or the like. The main difference between using `\hex` and the raw `\node[hex=...]` is that the former can automatically generate labels and set shape coordinates in the picture. If you want that for your board, it is recommended to use `\hex`. For example, if one does

```
\begin{tikzpicture}[
  every hex={label={auto=alpha column}},
  hex/labels is name=true]
  \hex(c=1,r=1);
\end{tikzpicture}
```

then one can refer to the location of the hex by its label i.e., (A1). Since the hex is really a TikZ node, we can also use anchors defined for hex node shape, such as (A1.west), (A1.north edge), and so on. This is not possible if one uses the `\node` macro.

2.2 Hex bevels

A bevel (or “shadow-effect”) can be added to hexes using the key `bevel`, with a value that specifies where the light comes from (e.g., north west or NW). The percentage of the half width of a chit of the bevel can be specified by the key `bevel fraction` (default 10%).

2.3 Styling hexes

Typical TikZ options can be passed to the `\hex` macro. For example, if you want to draw the hex borders in red, simply pass `draw=red` in the [*optional*] arguments to `\hex`. Individual parts of the hexes can be styled separately. the default style used by `\hex` is `tikz/hex/hex`. Users can redefine this style to suit their needs. If one does not want to change the default style, or pass the same argument to all `\hex`s one can define the style `tikz/every hex`. For

example, if one wants to auto label all hexes, one can do

```
\begin{tikzpicture}
  \begin{scope}[every hex/.style={label=auto}]
    % Hexes
  \end{scope}
\end{tikzpicture}
```

For example, to render only the corners of the hexes, as popular among some designers, one can do

```
every hex/.style={
  dash pattern=on .2cm off .6cm on .2cm off 0cm
},
```

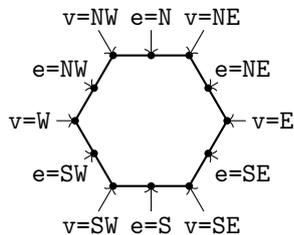
Note that the dash pattern should be 1cm long and the last element should be `off 0cm` so the dash pattern is started afresh on each hex edge.

2.4 Hex coordinate system

The package defines a coordinate system based on hexes. The centre of a hex is specified as $\langle column \rangle$ - $\langle row \rangle$ pairs, while vertexes and mid-point on edges can be specified separately. The syntax of the coordinates is

$(\text{hex cs:row}=\langle \text{hex-row} \rangle, \text{column}=\langle \text{hex-column} \rangle, \text{vertex}=\langle \text{vertex} \rangle, \text{edge}=\langle \text{edge} \rangle)$

where $\langle \text{vertex} \rangle$ and $\langle \text{edge} \rangle$ are optional. The hex row and column defaults both to 0 and can be decimal numbers. The row, column, vertex, and edge keywords may be shortened to `r`, `c`, `v`, and `e`, respectively. Possible vertexes and edges are listed in Table 1.



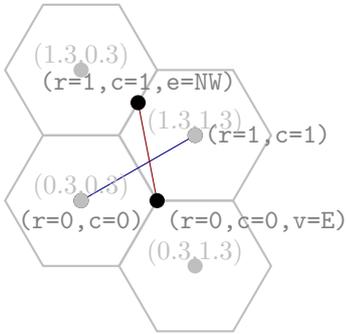
vertex=	Angle	edge=	Angle
east	E	north east	NE 30°
north east	NE	north	N 90°
north west	NW	north west	NW 150°
west	W	south west	SW 210°
south west	SW	south	S 270°
south east	SE	south east	SE 330°

Table 1: Vertex and edge positions

In Figure 2 is an example of a picture drawn in this coordinate system.

Important: When the horizontal distance to the centre of a hex becomes less than $-\cos 60^\circ$ or larger than $b - \cos 60^\circ$ we effectively have a new hex column, and the coordinates are shifted upward or downward for smaller or larger numbers. Figure ?? illustrates. this. This can make it a little hard to specify coordinates relative to a hex centre. Alternatively one may use vertex or edge specifications together with a relative offset in those directions. If one require even more flexibility, one can use the TikZ library `calc` to add arbitrary offsets, e.g.,

```
\coordinate at ($(\text{hex cs:c=1,r=10})+(.2,.2)$);
```



Hexes and lines drawn with

```

\hex(0,0)\hex(0,1)\hex(1,0)\hex(1,1)
\draw[blue!50!black] (hex cs:r=0,c=0) --
                    (hex cs:r=1,c=1);
\draw[red!50!black] (hex cs:r=0,c=0,vertex=E) --
                    (hex cs:r=1,c=1,edge=NW);
\fill[lightgray](hex cs:r= .3,c= .3) circle(0.1);
\fill[lightgray](hex cs:r=1.3,c= .3) circle(0.1);
\fill[lightgray](hex cs:r=0.3,c=1.3) circle(0.1);
\fill[lightgray](hex cs:r=1.3,c=1.3) circle(0.1);

```

Figure 2: Hex coordinate system

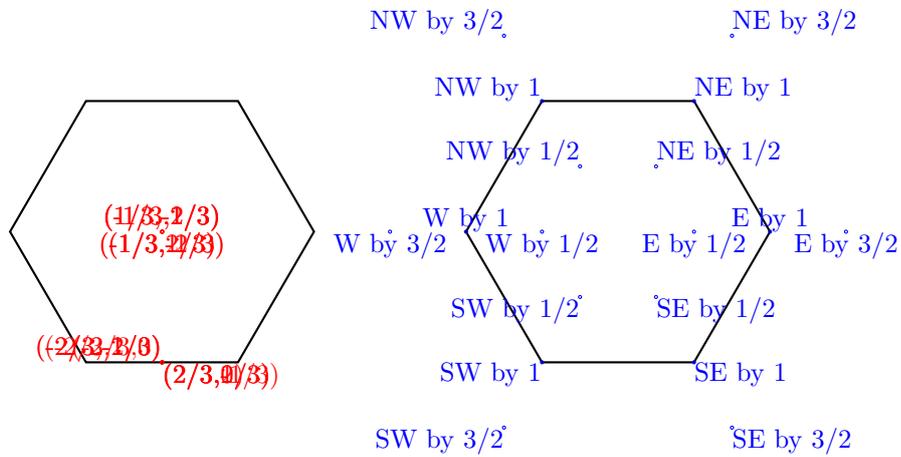


Figure 3: Relative coordinates

2.5 Terrains

Terrains are rendered using tile images or TikZ pictures. The available terrains are shown in Tables 2 and 3. Users can provide their own tile images and select those via `terrain={image=image}` or defined TikZ pictures and select those via `terrain={pic=pic-name}`. In all cases, the terrain graphics is clipped to the hex.

The terrain of a hex is selected via the multi-valued key `terrain`. Sub-keys of this key are

`image=graphics-file` Specifies terrain tile image *graphics-file*.

`pic=picture-key` Specifies terrain tile TikZ picture.

`code=tikz-code` Any valid TikZ code

`clip=path(s)` TikZ path specification to clip the terrain within the hex.

`random rotation` Applies a random rotation to the terrain image or picture. This will create an effect where the hexes look less alike.

`rotate=angle` Applies a rotation by *angle* to the terrain image or picture. Note that the *angle* should most likely be multiples of 60°.

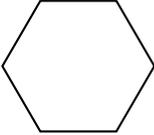
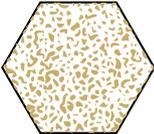
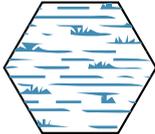
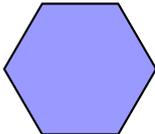
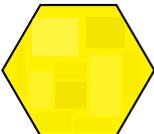
Symbol	Name	<code>terrain={image=<i>image</i>}</code>	Symbol	Name	<code>terrain={image=<i>image</i>}</code>
	Clear			Beach	<code>{beach}</code>
	Light woods	<code>{light_woods}</code>		Woods	<code>{woods}</code>
	Rough	<code>{rough}</code>		Swamp	<code>{swamp}</code>
	Mountains	<code>{mountains}</code>		Sea	<code>{sea}</code>
	Fields	<code>{fields},fill=yellow</code>		Fields	<code>{speckle},fill=hostile</code>

Table 2: Terrains specified via tile images

The terrain can be clipped by the sub-key `clip`. This can be useful if the game specifies movement costs in terms of hex-edge crossing, for example *First Blood* [1]. In that case, a hex may be, for example, a jungle hex, but some edges a

Symbol	Name	terrain={pic= <i>image</i> }
	Mountains	{pic=hex/terrain/mountain,line width=3pt}

Table 3: Terrains specified via TikZ pictures

clear. Thus movements across such an edge would count as moving into clear territory while moving over other edges will count as moving into a jungle. This is, of course, not how most games count movement costs, but this package nonetheless facilitates such rules. Table 4 shows a few examples of predefined clippings of terrain.

Users can define TikZ pictures that specify clipping paths as needed. For example, one could add clipping to the terrain to ensure that other graphics in the hex stands out.

2.5.1 Styling terrains

Terrains use the key `tikz/hex/terrain` to render the terrains. This is mainly useful for terrains made from TikZ pictures.

2.6 Ridges

Ridges, or hill or mountain slopes, can be added to a hex via the keyword `ridges`. The keyword takes a list of hex edges and generates symbology for the ridge on the chosen edges. Note that the edges does not have to be continuous, as illustrated in the bottom right of Table 5, nor in any particular order. The edges are specified as compass direction

north east, north, north west, south west, south, south east.
NE, N, NW, SW, S, SE

Table 5 shows some examples.

2.6.1 Styling ridges

Every ridge is drawn with the style `tikz/hex/ridges`. Users can customise this style. The default is to draw thin black wave lines (TikZ decoration `waves`). The default style also takes care to auto scale line widths.

2.7 Labels

Labels can be placed on the hexes via the keyword `label`. The label can either be auto-generated or given explicitly. Table 6 shows the various choices.

The option `auto=inv y x plus 1` will label the rows inversely, and add one to the column number. This requires that the key `tikz/max hex row` has been set to the largest row number used.

In addition to the sub-keys `none`, `auto`, and `text`, one can also specify the following keys

`place=coordinates` specifies the Location of label within the hex. The anchor point of the text will be placed at this point.

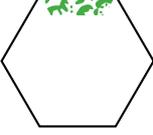
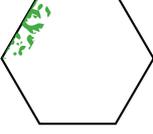
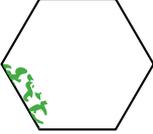
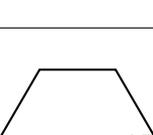
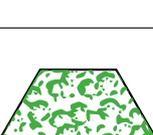
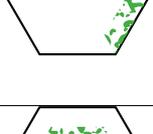
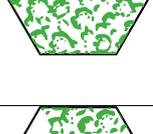
Symbol	terrain={clip=,...}	Symbol	terrain={clip=,...}
	{hex/sextant=NE}		{hex/large sextant=NE,hex/large sextant=N}
	{hex/sextant=N}		{hex/sextant=NE, hex/sextant=N, hex/sextant=NW}
	{hex/sextant=NW}		{hex/sextant=NE, hex/sextant=N, hex/sextant=NW, hex/sextant=SW}
	{hex/sextant=SW}		{hex/sextant=NE, hex/sextant=N, hex/sextant=NW, hex/sextant=SW, hex/sextant=S}
	{hex/sextant=S}		{hex/sextant=NE, hex/sextant=N, hex/sextant=NW, hex/sextant=SW, hex/sextant=S, hex/sextant=SE}
	{hex/sextant=SE}		{hex/sextant=NE, hex/sextant=N, hex/sextant=NW, hex/sextant=SW, hex/sextant=S, hex/sextant=SE, hex/sextant=C}
	{hex/sextant=C}		{hex/sextant=NE, hex/sextant=N, hex/sextant=S, hex/sextant=SE, hex/sextant=C}

Table 4: Terrain clipped via clip sub-key

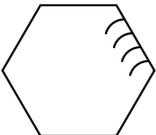
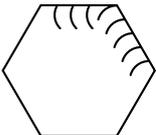
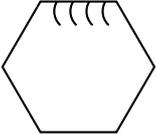
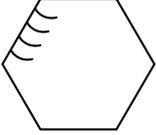
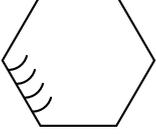
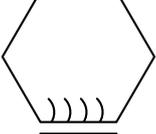
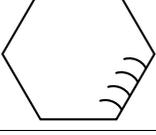
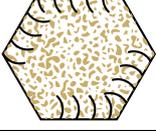
Symbol	ridges=	Symbol	ridges=
	NE		NE,N
	N		NE,N,NW
	NW		NE,N,NW,SW
	SW		NE,N,NW,SW,S,line width=3pt
	S		NE,N,NW,SW,S,SE,color=brown!70!black
	SE		N,S,NW,SE

Table 5: Ridges

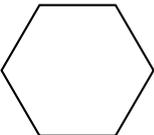
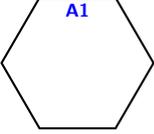
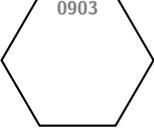
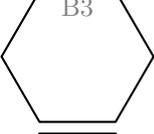
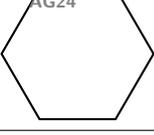
Symbol	Name	Column/Row	label=
	No label	n/a	none
	User specified	n/a	text=B10
	User specified	n/a	{color=blue,text=A1}
	Two-digit, zero padded numbers	9/3	auto
	Column letter, number row	2/3	{auto=alpha column,font=\noexpand\rmfamily} †
	Two letter column, two digit row	6/24	{auto=alpha 2 column,anchor=north east}

Table 6: Labels

†When specifying macros as key values in the options, for example the value `\rmfamily` for the key `font` above, we have to put a `\noexpand` in front if the macro. This is to prevent early expansion of the macro, which would cause errors. A minor nuisance.

[`{}`]options] at the start of the option (but inside braces `{...}`) can be used to give additional style options.

2.7.1 Styling labels

All labels use the style `tikz/hex/label`. By default, this places the label at the top of the hex, and renders the text as gray script sized text. Users can customise this style. If a user does not want to change the default style, or want to pass the same option to all labels, then one can set the key `tikz/every label` to those options.

2.8 Towns

Towns in hexes are made via the key `town`. This key takes several sub-keys, as illustrated in Table 7

Symbol	town=	Symbol	town=
			<code>{name=Copenhagen}</code>
	<code>{pic=hex/town/city}</code>		<code>{red,pic=hex/town/city}</code>
	<code>{fill=red}</code>		<code>{name=London}</code>
	<code>{red,name=Paris}</code>		<code>{above=0.8,name=Berlin}</code>
	<code>{place={(.2,.2)}}</code>		<code>{font=\noexpand\itshape,name=Amsterdam} †</code>

Table 7: Towns

†When specifying macros as key values in the options, for example the value `\rmfamily` for the key `font` above, we have to put a `\noexpand` in front if the macro. This is to prevent early expansion of the macro, which would cause errors. A minor nuisance.

The sub-keys available for the `town` key are

`pic=⟨town-pic⟩` The name of a TikZ picture. Currently defined are `hex/town/town` and `hex/town/city`. Users can provide alternate definitions or new types by defining TikZ pictures.

`place=⟨coordinates⟩` Location of label within the hex. The anchor point of the text will be placed at this point.

`name=⟨name⟩` Name of town

2.8.1 Styling towns

Towns uses two styles: `tikz/hex/town` for the town graphics, and `tikz/hex/town name` for the name of the town. In addition, a user may set the key `tikz/every hex town` to contain options to be passed to all towns.

2.9 Extra graphics for hexes

Additional graphics for hexes can be added by the two keys `extra` and `extra clipped`. The difference between the two are that graphics specified by `extra clipped` are clipped (restricted) to the hex, while graphics given by `extra` may extend beyond the hex. Both keys accept a comma separated list of arguments, where each element has the syntax

```
[<options>](<placement>)<picture>
```

Both `<options>` and `<placement>` are optional, and specifies keys to draw `<picture>` with and the relative location in the hex, respectively. The required argument `<picture>` must name a TikZ picture, for example `hex/fortress`. This can be useful for marking hexes on the board. For example to mark a set-up hex for one faction of the game.

One could for example define the following pictures to define set-up points for a Sovjet and German faction

```
setup/sovjet/.pic={
  \path[fill=red,draw=yellow,pic actions]
    ( 90:.4)--(126:.15)--
    (162:.4)--(198:.15)--
    (234:.4)--(270:.15)--
    (306:.4)--(342:.15)--
    ( 18:.4)--( 54:.15)--cycle;},
setup/german/.pic={
  \path[fill,pic actions]
    (-.4, -.1) rectangle(.4,.1)
    (-.1, -.4) rectangle(.1,.4);
  \path[draw,pic actions]
    (-.4,-.2) -- (-.2,-.2) -- (-.2,-.4)
    (-.4, .2) -- (-.2, .2) -- (-.2, .4)
    (.4, .2) -- (.2, .2) -- (.2, .4)
    (.4,-.2) -- (.2,-.2) -- (.2,-.4);}
foo/large/.pic={
  \path[fill=gray,pic actions] (-1,-.5) rectangle(1,.5);},
}
```

We can place extra graphics in hexes as shown in Table 8.

To finish off this part on hexes and what we can do with those, we generate a map in Figure 4.

2.10 Rivers, borders, and roads

Rivers and borders follow the hex sides and are added to the current `tikzpicture` using `\river` and `\border` macros respectively. They are specified as regular TikZ paths. It is useful to utilise the hex coordinate system for this.

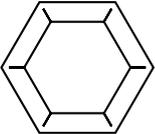
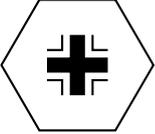
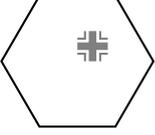
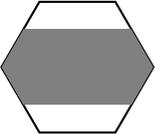
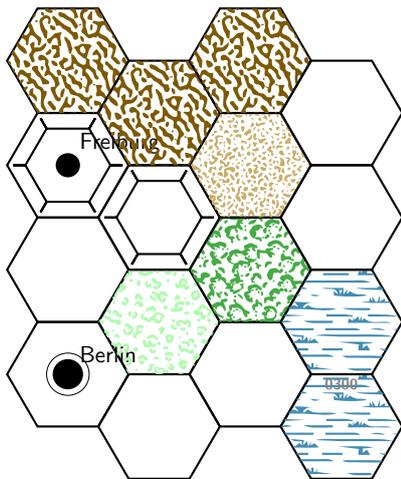
Symbol	extra=
	hex/fortress
	setup/sovjet
	setup/german
	{setup/german,hex/fortress} [†]
	{[line width=2pt,brown] fortress 2} [‡]
	{[shift={(.2,.2)}] setup/sovjet} [‡]
	{[shift={(.2,.2)},scale=.5,color=gray] setup/german} [‡]
	foo/large
Symbol	extra clipped=
	foo/large

Table 8: Hex extra graphics. Note that in the last line we use the graphics `foo/large` with `extra clipped` (compare to line just above) to restrict the graphics to the hex.

[†]When specifying more than one item, the list must be enclosed in braces (`{...}`)

[‡]When an item in the list of `extra` contains a comma (`,`), for example in a list of graphics options, then we need to enclose the inner list *and* the whole list in braces (`{...}`) to protect against unwanted expansion.



```

\hex[town={pic=hex/town/city,name=Berlin}] (r=0,c=0)
\hex[] (r=0,c=1)
\hex[] (r=0,c=2)
\hex[terrain={swamp},label=auto] (r=0,c=3)
\hex[] (r=1,c=0)
\hex[terrain={light woods}] (r=1,c=1)
\hex[terrain={woods}] (r=1,c=2)
\hex[terrain={swamp}] (r=1,c=3)
\hex[town={name=Freiburg},extra=hex/fortress] (r=2,c=0)
\hex[extra=hex/fortress] (r=2,c=1)
\hex[terrain={rough}] (r=2,c=2)
\hex[] (r=2,c=3)
\hex[terrain={mountains}] (r=3,c=0)
\hex[terrain={mountains}] (r=3,c=1)
\hex[terrain={mountains}] (r=3,c=2)
\hex[] (r=3,c=3)

```

Figure 4: Placing hexes

```

\river[options] path;
\border[options] path;

```

Rivers are essentially borders, but are randomized to give a more aesthetically pleasing output.

Roads and railroads typically go from hex-center to hex-center, and are added using the macro `\road`. The road or railroad is specified via a regular TikZ path.

```

\road[options] path;
\railroad[options] path;

```

Towns and cities conveniently serve as places to split up a road at.

2.10.1 Styling paths

Rivers, roads, railroads, and borders are styled by `hex/river`, `hex/road`, `hex/railroad`, and `border`, respectively, and the keys `every hex river`, `every hex road`, `every hex railroad`, and `every hex border` will also be applied. The latter can be defined by the user.

2.11 Board clipping and frame

In the river, border, and road example above, the roads extend beyond the hexes, which does not look very nice. One way to deal with this, is to draw a clipping box around the hexes

This technique works fine for examples in a manual, it has a somewhat displeasing effect for a full board. The package therefor defines the macro `\boardclip` which clips the graphics according to the defined hexes.

```

\boardclip(lower-left)(upper-right){options}

```

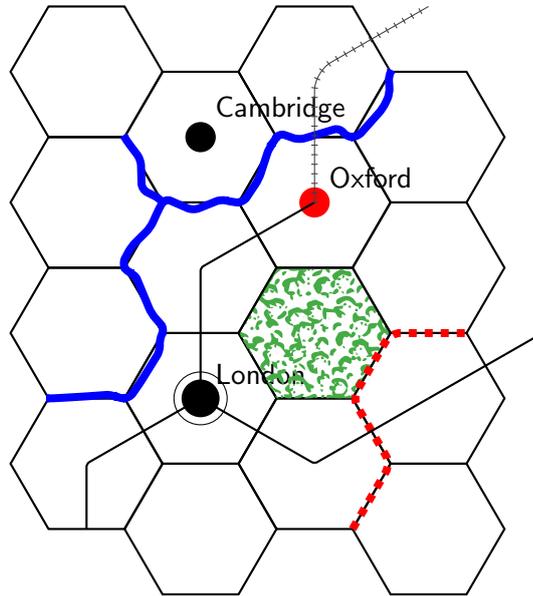


Figure 5: Adding rivers, borders, and roads

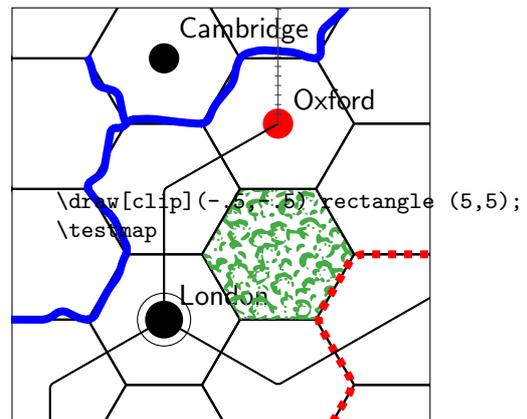


Figure 6: Clipping for a manual using a *TikZ* `\draw[clip]` command.

A clipping path of that spans from the hex at $\langle lower-left \rangle$ to $\langle upper-right \rangle$. Note, that both of these arguments should only specify the column and row keys. If $\langle options \rangle$ is non-empty, then the clipping path is drawn with those options.

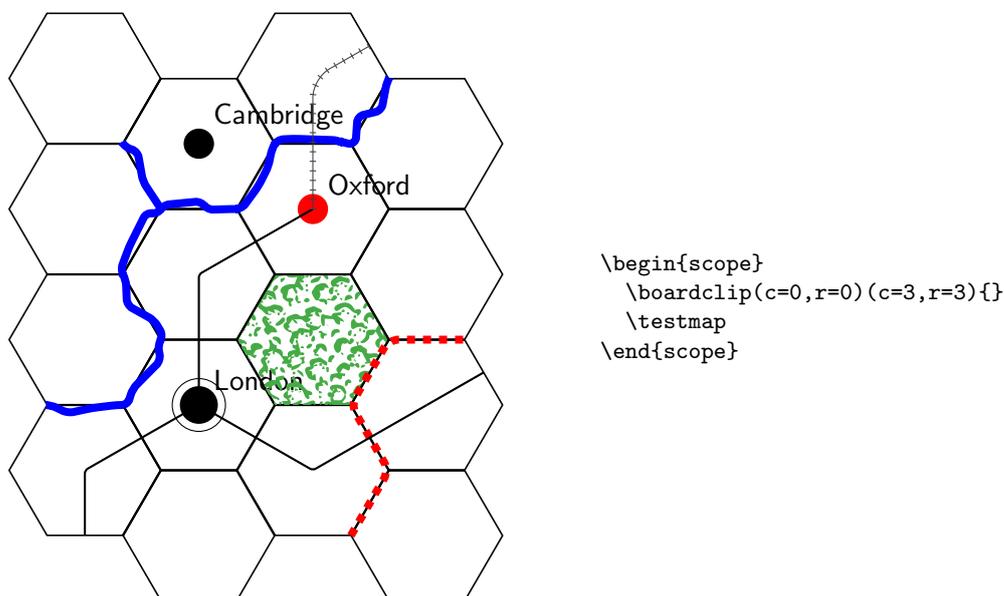


Figure 7: Snug-fit clipping of board using the macro `\boardclip`

This is particularly useful together with the `\boardframe` macro. This macro will put a frame around the board, optionally with a margin.

```
\boardframe[ $\langle margin \rangle$ ]( $\langle lower-left \rangle$ ) $\langle upper-right \rangle$ 
```

where $\langle lower-left \rangle$ and $\langle upper-right \rangle$ are as for `\boardclip`. The $\langle margin \rangle$ must be a number, and specifies an optional margin around the hexes, The argument $\langle options \rangle$ specifies how the frame is drawn. The idea is to first draw the frame, then the clipping shape, and then the hexes. One should take care to use the $\langle options \rangle$ argument to `\boardclip` to specify a default background color. The frame is drawn with the style `hex/board frame`

The `\boardframe` macro prints the position of the rectangle to the log output, if one needs to do some more stuff around the board.

2.12 Constructing the physical board

If the board is not too large, so that it may fit on a paper format that can easily be printed (say A4, A3, Letter, or Tabloid), one can simply print the board and glue it onto a sturdy surface (say 1½mm poster carton). However, if the board is large, meaning it does not fit on a piece of printable paper, then one has two options.

Either scale the board down so that it fits. Use the TikZ key `scale= $\langle factor \rangle$` as an argument to the `tikzpicture` environment in which you create the board. In this case, you should make sure you also scale the chits by the same $\langle factor \rangle$, again via the `scale` key.

Or you can split the board over several pages. The package provides a number of tools to help with this.

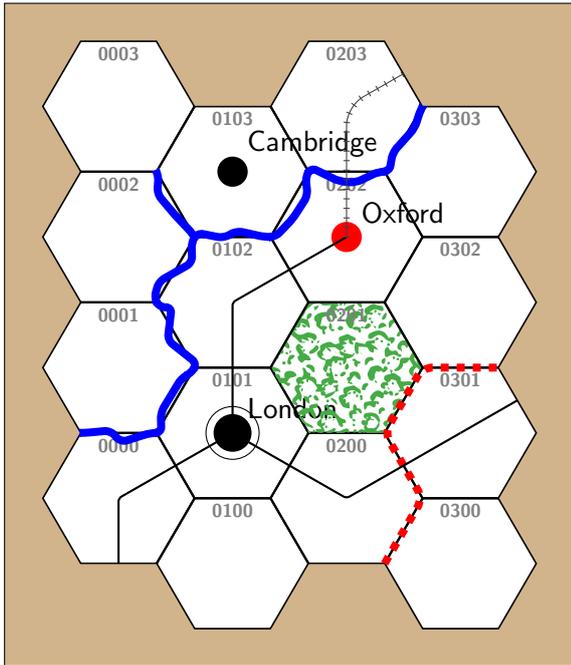


Figure 8: Combining a frame and clipping

2.12.1 Split the board over multiple sheets

First, make sure you produce a standalone PDF of the board only.

```
\documentclass{standalone}
\usepackage{wargame}
\begin{tikzpicture}[scale=SCALE]
  % Define the board here.
\end{tikzpicture}
```

and that you have created this PDF — say `board.pdf`.

Next, prepare another document in which we will do the calculations. For example

```
\documentclass[11pt]{standalone}
\usepackage{wargame}
\begin{document}
\splitboard{paper=letter,margin=.7,ncol=2,nrow=2,overlap=1}
\end{document}
```

to calculate the split of `board.pdf` over 2×2 letter paper sheets, with a non-printable margin of 7mm, and an overlap between the segments of 1cm.

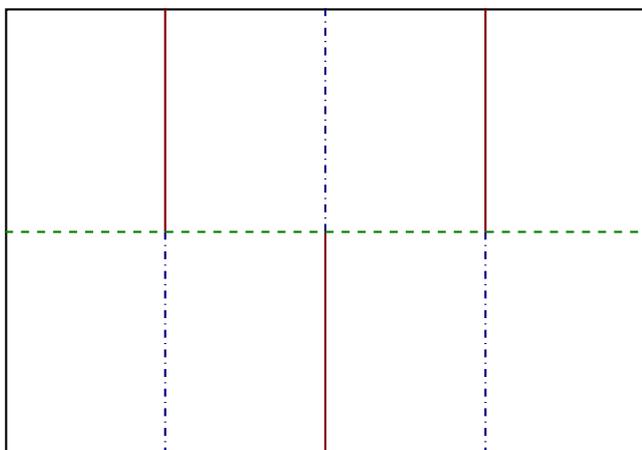
The possible keys for the `\splitboard` macro are

- `paper=<format>`: Specifies the paper format. One of `a4`, `a3`, `letter`, `tabloid`. Default is `a4`.
- `landscape`: Sets the paper format to be in landscape mode (default is portrait).
- `margin=<size in centimetres>`: Size of margins on each sheet in centimetres *without* unit. That is put 0.6 for 6mm, *not* 6mm. Default is 0.6. This should be *slightly* larger (by roughly 5%) than the *least* margin required by the printer used. *Must* be given *before* `paper` to have any effect.
- `ncol=<number of columns>`: Sets the number of columns of sheets.
- `nrow=<number of rows>`: Set the number of rows of sheets.
- `overlap=<size in centimetres>`: Sets the size of the overlap between sheets in centimetres *without* unit. That is put 2 for 2cm, *not* 2cm. Default is 2.
- `image=<image file name>`: File name of the board image (a PDF). Default is `board`
- `output=<output file name>`: File name (without `.tex` ending) to write calculated split to.
- `standalone`: Boolean flag. If true, then output file will be a standalone document (i.e., has a `\documentclass`).
- `scale=<scale>`: Set scale of board.

The macro will produce a file named `<output file name>.tex` which can be included in another document to generate the split board PDF. Crop marks will be added to the board segments to make it easier to align the parts.

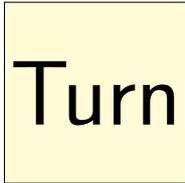
2.12.2 Foldable board

To make a fold-able board use for example the below template to create grooves and cuts.



- Cut through carton
- - - - - Cut groove ($\frac{1}{2}$ through) in carton on *back* side
- - - - - Cut groove ($\frac{1}{2}$ through) in carton on *front* side

This will fold the board down to a fourth of the size of the full map. For example, if the board is A1 (84 cm \times 59.4 cm) it will fold down to A4 (21 cm \times 29.7 cm) for easier storage.



chit made with

```
\tikzset{
  wg/big text/.pic={
    \node[font=\sffamily\fontsize{18}{0}%
      \selectfont]{#1};}
}
\tikz{
  \chit[full={wg/big text={Turn}},
    black,fill=yellow!20!white](0,0)
}
\end{tikzpicture}
```

Figure 10: An example of a full-frame chit.

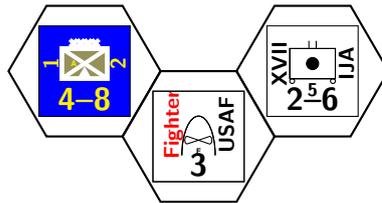


Figure 11: Example of chits fit within hexes.

Since chits are really *TikZ* nodes we can use anchors on the chit. Unlike for `\hex` where there are additional features available when using the dedicated macro, there really isn't much difference between `\chit` and `\node[chit=...]`.

3.1 Styling chits

Typical *TikZ* options can be passed to the `\chit` macro. For example, if you want to draw the chit with a red foreground, simply pass `draw=red` in the `[<optional>]` arguments to `\chits`. Individual parts of the hexes can be styled separately.

Important: To set the colours of the various elements, one should use

`color=<foreground and text>` Selects the foreground colour of lines, text, and so on, including for the NATO App6(C) symbol.

`fill=<background>` Selects the background colour of the full chit. By default this is transparent.

`text=<text foreground>` Selects the colour used for text in the chit. This overrides `color` for text.

`draw=<foreground>` This sets the colour for foreground elements, excluding text.

TikZ allows one to pass a `<colour>` as arguments for drawing and understands that as giving the foreground and text colours. However, that key is *deprecated* for this library, as it does not properly propagate through².

The styles used by the `left`, `right`, `setup`, `factors`, and `symbol` elements are `tikz/chit/left`, `tikz/chit/right`, `tikz/setup`, `tikz/factors`, and `tikz/symbol` respectively. A user can redefine these to change the appearance of

²The colour `pgfstrokecolor` is not modified by that.

the chits. For example, one could make the symbol larger by setting a different `scale`, move the factors to the side by changing `shift`, and so on.

Pictures used by these elements are also styled by similar keys. For example, the picture `chit/identifier` is styled by `tikz/chit/identifier`.

A bevel (or “shadow-effect”) can be added to chits using the key `bevel`, with a value that specifies where the light comes from (e.g., north west or NW). The percentage of the half width of a chit of the bevel can be specified by the key `bevel fraction` (default 10%). This can be used for both symbol or full chits.

In addition, one can define the key `tikz/every chit` to be the default options for all chits.

By default, the outer “frame” of a chit is drawn with the same graphics options as the chit it self (i.e., same fill and stroke colour). To change that, one can pass `frame={\options}` as part of the chit options.

3.2 Defining preset chit types

One can conveniently pre-define some chit styles. For example, given the style definition

```
\tikzset{
  my chit/.style={/chit/symbol={[
    faction=friendly,
    command=land,
    main=armoured]},
    /chit/left={chit/identifier={Mine}},
    /chit/factors={chit/2 factors={2,4}}}}
```

We can use that to make different chits with some commonalities defined by that style. For example



where, in the second example, we have passed additional options to `\chit`. Note that we *must* give the full path to the `chit` keys when defining a style like this.

3.3 Kriegspiel chits

By passing the option `kriegspiel` to the `\chit` command or in a `chit` node, the shape of the chits will be changed from square to rectangular.

Important Not all NATO symbols have been adapted to facilitate that shape.

Here are some examples



These are produced by

```
\begin{tikzpicture}[
  chit/factor/.append style={font=\sffamily\bfseries\small},
```

```

/chit/.cd,
hex/.style={lower right={#1}},
turn/.style={lower left={#1}}]
\chit[symbol={main=infantry,echelon=corps,faction=friendly,command=land},
  factors={chit/2 factors={4,3}},
  parent={chit/small identifier={II}},
  unique={chit/small identifier={4}},
  turn={chit/small identifier={2}},
  hex={chit/small identifier={0120}},
  kriegspiel,
  color=black,
  fill=hostile](0,0);
\chit[symbol={
  main={[fill=pgfstrokecolor]artillery},%
  echelon=corps,faction=friendly,command=land},
  factors={chit/2 factors artillery={4,3,2}},
  parent={chit/small identifier={II}},
  unique={chit/small identifier={4}},
  turn={chit/small identifier={2}},
  hex={chit/small identifier={0120}},
  kriegspiel,
  color=black,
  fill=friendly,
  kriegspiel
](2.5,0);
\chit[
  frame={black},
  symbol={
    main=reconnaissance, echelon=corps,command=land,faction=friendly,
    color=black,
    fill=hostile,
  },
  factors={chit/2 factors={4,3}},
  parent={chit/small identifier={II}},
  unique={chit/small identifier={4}},
  turn={chit/small identifier={2}},
  hex={chit/small identifier={0120}},
  color=white,
  fill=unknown!50!black,
  kriegspiel](5,0);
\chit[
  frame={black},
  symbol={
    main={reconnaissance artillery},
    echelon=corps,command=land,faction=friendly,fill=friendly,
  },
  factors={chit/2 factors artillery={4,3,2}},
  parent={chit/small identifier={II}},
  unique={chit/small identifier={4}},
  turn={chit/small identifier={2}},
  color=white,
  fill=neutral!50!black,
  kriegspiel](7.5,0);

```

```
\end{tikzpicture}
```

4 NATO App 6(c) symbols

The NATO markers are designed to fit within the template shown in Figure 12. The template is serves as a placement guide of the the various parts of the NATO marker as illustrated in Figure 13.

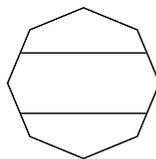


Figure 12: Template for NATO symbols

```
\natoapp[<key-value-pairs>](<location>)(<name>)
```

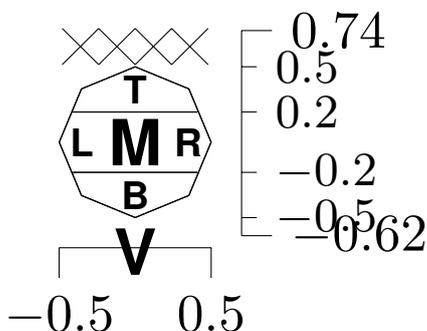
where all arguments are optional. Keys are defined to fill in the various parts of the markers. These keys are

faction=*<faction>* Selects the faction used for the symbol. See also Section 4.1.

command=*<command>* Selects the command used for the symbol. See also Section 4.1.

main=*<mains>* Specifies the main symbol(s). This can be a comma separated list of specifiers (delimited by braces $\{\langle first, second, \dots \rangle\}$), and each symbol can be preceded by an optional argument to shift, scale, rotate, etc., the individual symbols. .

left=*<lefts>*, **right**=*<rights>*, **top**=*<tops>*, **bottom**=*<bottoms>*, **below**=*<belows>* Specifies the left-, right-hand, top, bottom, and lower symbol(s). The format of the arguments *<lefts>*, *<rights>*, *<tops>*, *<bottoms>*, and *<belows>* has the same format as *<mains>*.



The figure is typeset by

```
\natoapp[faction=none,
command=base,
echelon=army,
main={text=M},
top={text=T},
bottom={text=B},
left={text=L},
right={text=R},
below={text=V}]
```

Figure 13: Main keys of `\natoapp`. The bottom and right hand bars indicate one unit of length.

Other keys are available to further customise the appearance of the symbols

echelon=*<size>* The size of the unit described. Possible values are *team*, *squad*, *section*, *platoon*, *company*, *battalion*, *regiment*, *brigade*, *division*, *corps*, *army*, *army group*, *theatre*, and *command*.

frame=*<keys>* Extra keys for frame.

4.1 Faction and Command Selection

Table 9 shows the various bases used for the various *faction/command* combinations. Also shown in the table is the base template for main identifiers.

<i><command></i>	<i><faction></i>			
	friendly	hostile	neutral	unknown
air				
land				
equipment				
installation				
sea surface				
sub surface				
space				
activity				
dismounted				

Table 9: Frames for various combinations of *<faction>* and *<command>* combinations. These are drawn with the `pic` given by `natoapp6c/<faction>/<command>` with the options `draw=blue,fill=<faction>`. If no `fill` is specified, then the background will be transparent. Note, the template for main identifiers is also shown on top of each frame.

The fill color of the frame is set by the key `frame`. If this is or contains the special value `faction`, then the frame fill colour will be the standard for the faction as illustrated in figure 14.

Elements of the frame can be controlled by the key `frame`.

`frame=<keys>` Additional keys to pass to the frame drawing. The special option `faction` will make the frame be filled with the standard faction color.

Table 10 illustrates this.

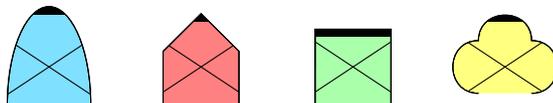


Figure 14: Illustration of using the special value `fraction` for the `frame` key

Example	<code>frame={color,...}</code>	<code>frame={fill,...}</code>	<code>frame={draw,...}</code>	<code>frame={line width,...}</code>
	red			thick
		yellow		thin
			blue	
		pink	magenta	
	red	green	blue	ultra thick

Table 10: Illustration of frame colour choices

4.2 Unit Size (echelon)

The size of a unit a marker represents is given by the `echelon` keyword. Table 11 shows the various markers and approximate unit sizes.

4.3 Unit type identification

See Table 12.

References

- [1] Hanover,C., Hendrix,C.E., & Llewelyn,S., *First Blood*, 1997, <https://grogard.com/fb/>. See also implementation using this package at https://gitlab.com/wargames_tex/firstblood_tex.
- [2] *NATO Joint Military Symbology*, APP-6(C), May 2011, https://en.wikipedia.org/wiki/NATO_Joint_Military_Symbology.
- [3] *NATO Joint Military Symbology*, APP-6(D), October 2017, <https://nso.nato.int/nso/nsdd/main/standards/ap-details/1912/EN>
- [4] `milsymb` package, <https://www.ctan.org/pkg/MilSymb>.

5 Implementation

5.1 The wargame package

First, package identification

```
1 \ProvidesPackage{wargame}
```

Then needed packages

```
2 \RequirePackage[svgnames]{xcolor}
3 \RequirePackage{tikz}
```

A switch to include terrain pictures (which take a lot of memory for some reason).

```
4 \@ifundefined{ifhex@terrain@pic}{%
5   \newif\ifhex@terrain@pic
6   \hex@terrain@picfalse}{}
```

Options

```
7 \DeclareOption{notterrainpic}{%
8   \hex@terrain@picfalse}
9 \DeclareOption{terrainpic}{%
10  \hex@terrain@pictrue}
11 \ProcessOptions\relax
```

Finally, the used TikZ libraries

```
12 \usetikzlibrary{wargame.hex,wargame.natoapp6c,wargame.chit}
```

Example	echelon	Approx. size	Sub-units	Officer
	team	3-5	none	Corporal or Sergeant
	squad	5-10	1-2 teams	Sergeant
	section	7-13	2-3 teams	Sergeant
	platoon	25-40	Several squads/sections	Second Lieutenant
	company	60-250	Several platoons	Captain
	battalion	300-1000	2-6 companies	Lieutenant colonel
	regiment	500-2000	3-7 battalions	Colonel
	brigade	2000-5000	Several battalions	Colonel
	division	10000-20000	Several brigades/regiments	Major General
	corps	30000-60000	Several divisions	Lieutenant General
	army	100000	Several corps (5-10 divisions)	General
	army group	120000-500000	Several armies	Field Marshal
	theatre	250000+	Several army groups	Field Marshal
	command		Not a unit size, but designator	

Table 11: Illustration of echelon values. Approximate sizes and command officer titles are typical modern day United States of America army values and identifiers. Historically the unit sizes have changed, as has officer titles. Furthermore, both the unit sizes, names, and command officer titles may vary from country to country, even across command.

Symbol	Type & Abbreviation	
	Air assault	AA
	Air defence	ADA
	Airborne	AB
	Amphibious	AM
	Anti tank/armoured	AT
	Armoured	AR
	Chemical biological radiological nuclear	CB
	Combined arms	CAR
	Engineer	ENG
	Field artillery	FA
	Infantry	IN ³
	Mechanised infantry	M
	Mountaineer	MTN
	Naval	N
	Reconnaissance	REC
	Special Operations Forces	SOF
Symbol	Echelon & Abbreviation	
XXXXXX	Army group	AG
XXXXX	Army	A
XXX	Corps	-
XX	Division	D ⁴
X	Brigade	BD
|||	Regiment	REGT
||	Battalion	BN
|	Company	COY
●●●	Platoon	PLT
●●	Section	
●	Squad	

Table 12: Some abbreviations of unit type identifications

5.2 The `wargame.util` TikZ library

This library contains some utilities for use in the other libraries.

5.2.1 Miscellaneous macros

```
\wargamelogo
```

This will produce the logo for this package.



```
13 \tikzset{
14   wargame logo text/.style={
15     font=\sffamily\bfseries\fontsize{12}{14}\selectfont,
16     scale=2.8,
17     inner sep=0,
18     text width=1.8cm,
19     transform shape,
20     align=center},
21   wargame logo text content/.store in=\wg@logo@text@content,
22   wargame logo text content={{\huge\LaTeX} wargame},
23   wargame logo chit/.style={
24     chit={symbol={
25       faction=friendly,
26       command=land,
27       echelon=division,
28       main=infantry}},
29     factors={chit/2 factors={4,3}},
30     left={chit/identifier=III},
31     right={chit/small identifier={10\textsuperscript{th}}},
32     color=white,
33     fill=red!50!black
34   }
35 },
36   wargame logo/.style={
37     transform shape,
38     every hex/.style={fill=gray!5!white,draw=gray!75!black},
39     hex/first row is=0,
40     hex/first column is=0,
```

```

41   hex/short top columns=none,
42   hex/short bottom columns=none,
43   hex/row direction is=normal,
44   hex/column direction is=normal
45 }
46 }
47 \newcommand\wargamelogo[1][]{%
48   \begin{scope}[wargame logo,#1]
49     \node[hex={fill=gray!30!white}] (logo center)      at (hex cs:c=0,r=0) {};
50     \node[hex={terrain=light woods}] (logo light woods) at (hex cs:c=0,r=1) {};
51     \node[hex={terrain=city}]        (logo city)        at (hex cs:c=0,r=-1) {};
52     \node[hex={terrain=woods}]       (logo woods)       at (hex cs:c=-1,r=0) {};
53     \node[hex={terrain=mountains}]   (logo mountains)   at (hex cs:c=-1,r=1) {};
54     \node[hex={terrain=beach}]       (logo beach)       at (hex cs:c=1,r=1) {};
55     \node[hex={terrain=swamp}]       (logo swamp)       at (hex cs:c=1,r=0) {};
56     \node[wargame logo chit]         (logo chit)        at (hex cs:)      {};
57     \node[wargame logo text]         (logo text)        {\wg@logo@text@content};
58   \end{scope}}

```

\wg@dbg

Debugging support. The counter `\wargamedbglvl` sets the debug level. The package code then uses `\wg@dbg` to print out debugging messages. This macro takes two arguments — the first is the *least* debug level at which the message is printed, and the second is the message it self.

```

59 \newcount\wargamedbglvl\wargamedbglvl=0
60 \def\wg@dbg#1#2{%
61   \ifnum#1>\wargamedbglvl\relax\else\message{^^J#2}\fi}

```

\wg@addto@macro

The macro `\wg@addto@macro{<macro>}{<other>}` adds the definition of the macro `<other>` to the macro `<macro>`. This uses the `\toks` trick of storing the *tokens* of the definition of a `<macro>` and `<other>` into `@` and expanding that token into the definition of `<macro>`. Effectively, this means that the top-level definition of `<macro>` and `<other>` are expanded (i.e., macros used in the definition of either macro is *not* expanded) and then that becomes the new definition of `<macro>`.

We will use this macro to do *shallow* definitions of macros to contain keys and such.

```

62 \long\def\wg@addto@macro#1#2{%
63   \begin{group}
64   \toks@\expandafter\expandafter\expandafter{\expandafter#1#2}%
65   \xdef#1{\the\toks@}%
66   \end{group}}

```

\wg@nchor

```

67 \def\wg@nchor#1#2{% shape name, anchor
68   \wg@dbg{10}{Get '#2' in '#1'}%
69   \expandafter\csname pgf@anchor@#1@#2\endcsname%

```

```
70 \wg@dbg{10}{Got '\pgf@x', '\pgf@y'}
71 }
```

\wg@sub@anchor

Get anchor from sub node. We cannot use `\pgfpointanchor` since that returns the anchor coordinates in the global coordinate system.

```
72 \newif\ifwg@ignore@sub@anchor\wg@ignore@sub@anchorfalse%
73 \def\wg@sub@anchor#1#2{%
74 \wg@dbg{10}{^^JGet '#2' in '#1'}%
75 \@ifundefined{pgf@sh@ns@#1}{%
76 \ifwg@ignore@sub@anchor%
77 \wg@dbg{0}{WARNING: Shape '#1' not defined, anchor '#2' unknown}
78 \fi
79 \pgf@x=0cm\pgf@y=0cm}{%
80 \pgf@process{%
81 \csname pgf@sh@ma@#1\endcsname% MW
82 \csname pgf@sh@np@#1\endcsname%
83 \pgf@sh@reanchor{\csname pgf@sh@ns@#1\endcsname}{#2}}%
84 \wg@dbg{10}{-> \the\pgf@x,\the\pgf@y}%
85 }
```

Scratch dimensions

```
86 \newdimen\wg@tmpa
87 \newdimen\wg@tmpb
88 \newdimen\wg@tmpc
89 \newdimen\wg@tmpd
```

Macro to easy restore a saved path

```
90 \def\settosave#1{
91 \pgfsyssoftpath@setcurrentpath{#1}}
```

5.2.2 Pictures in compound nodes

\wg@pic

The macro `\wg@pic` will render a `pic`. This is used by the `natoapp6cs`, `chit`, and `hex` node shapes extensively.

The arguments are

1. Prefix
2. Position
3. Fixed options
4. User options
5. Picture.

That is, the macro expects calls like

```
\wg@pic[options](picture)\endwg@pic{prefix}{position}{options}
```

Note the `\endwg@pic` at the end of the call to swallow up *picture*. Typically this macro is used as

```
\edef\args{something} \expandafter\wg@pic\args\endwg@pic{prefix}{(position)}{options}
```

where *something* typically expands to [*user option*](*picture*)

First, the top-level macro `\wg@pic` that looks for user options.

```
92 \def\wg@pic{%
93   \ifnextchar[{\wg@@pic}{\wg@@pic[]}%
94 }
```

This macro then forwards to `\wg@@pic` to gobble up *picture*.

1. User options
2. Arguments

```
95 \def\wg@@pic[#1]#2\endwg@pic{%
96   \wg@dbg{2}{Options: '#1', picture: '#2'}%
97   \wg@@@pic{#1}{#2}%
98 }
```

1. User options
2. Arguments
3. Prefix
4. Coordinates
5. Fixed options

```
99 \def\wg@@@pic#1#2#3#4#5{%
100  \ifx|#2|\wg@dbg{3}{No picture given}%
101  \else%
102    \wg@dbg{3}{^^JWG Pic:
103      ^^J User options:  #1
104      ^^J Picture:      #2
105      ^^J Prefix:       #3
106      ^^J Coordinates:  #4
107      ^^J Fixed options: #5}%
108  % \wg@dbg{2}{\string\pic[#5,#1] at (#4) {#3#2}}%
109  \pic[#5,#1] at (#4) {#3#2};%
110  \ifwg@s@ve%
111    \pgf@relevantforpicturesizetrue%
112    \begin{getbbl}%
113      \pic[draw=none,fill=none,transform shape] at (#4) {#3#2};%
114    \end{getbbl}%
115    \wg@dbg{5}{Clipping to local bounding box}%
116    \clip (L.south west) rectangle (L.north east);%
```

```

117     \pgf@relevantforpicturesizefalse \global\wg@s@vefalse%
118     \fi
119 \fi%
120 \wg@dbg{3}{End of WG Pic}
121 }

```

`\wg@pic@all`

This macro sets all pictures in a list.

1. List
2. Prefix
3. Position
4. Styles

```

122 \def\wg@pic@all#1#2#3#4{%
123   \wg@dbg{2}{WG picture loop
124     ^^J List:   \meaning#1
125     ^^J Prefix: '#2'
126     ^^J Position: '#3'
127     ^^J Styles: '#4'}
128   \foreach \p in #1{%
129     \wg@dbg{2}{WG picture element: \meaning\p}%
130     \expandafter\wg@pic\p\@endwg@pic {#2}{#3}{#4}%
131   }%
132 }

```

5.2.3 Nodes in compound nodes

`\wg@node`

The macro `\wg@node` will render a node. This can be used by the `natoapp6cs`, `chit`, and `hex` node shapes.

The arguments are

1. Prefix
2. Position
3. Fixed options
4. User options
5. Body.

That is, the macro expects calls like

```
\wg@node[<options>]<body>\@endwg@node{<prefix>}{<position>}{<options>}
```

Note the `\@endwg@node` at the end of the call to swallow up *<body>*. Typically this macro is used as

```
\edef\args{<something>} \expandafter\wg@node\args\@endwg@node{<prefix>}<position>){<options>}
```

where *<something>* typically expands to [*<user option>*]*<body>*

First, the top-level macro `\wg@node` that looks for user options.

```
133 \def\wg@node{%
134   \@ifnextchar[{\wg@@node}{\wg@@node[]}%
135 }
```

This macro then forwards to `\wg@@node` to gobble up *<body>*.

1. User options
2. Arguments

```
136 \def\wg@@node[#1]#2\@endwg@node{%
137   \wg@dbg{2}{Options: '#1', body: '#2'}%
138   \wg@@@node{#1}{#2}%
139 }
```

1. User options
2. Arguments
3. Prefix
4. Coordinates
5. Fixed options

```
140 \def\wg@@@node#1#2#3#4#5{%
141   \ifx|#2|\wg@dbg{3}{No body given}%
142   \else%
143     \wg@dbg{3}{^^JWG Pic:
144       ^^J User options: #1
145       ^^J Body: #2
146       ^^J Prefix: #3
147       ^^J Coordinates: #4
148       ^^J Fixed options: #5}%
149     % \wg@dbg{2}{\string\pic[#5,#1] at (#4) {#3#2}}%
150     \node[#5,#1] at (#4) {#3#2};%
151   \fi%
152   \wg@dbg{3}{End of WG Node}
153 }
```

```
\wg@node@all
```

This macro sets all pictures in a list.

1. List
2. Prefix

3. Position

4. Styles

```
154 \def\wg@node@all#1#2#3#4{%
155   \wg@dbg{2}{WG picture loop
156     ^^J List:   \meaning#1
157     ^^J Prefix: ‘#2’
158     ^^J Position: ‘#3’
159     ^^J Styles: ‘#4’}
160   \foreach \p in #1{%
161     \wg@dbg{2}{WG picture element: \meaning\p}%
162     \expandafter\wg@node\p@endwg@node {#2}{#3}{#4}%
163   }%
164 }
```

5.2.4 Bounding boxes

Bounding box dimensions

```
165 \newdimen\wg@bb@minx
166 \newdimen\wg@bb@miny
167 \newdimen\wg@bb@maxx
168 \newdimen\wg@bb@maxy
```

Enable or disable bounding box tracking

```
169 \newif\ifwg@notrelevantforpathsize\wg@notrelevantforpathsizefalse
```

wg@resetbb

Reset the bounding box tracking dimensions

```
170 \def\wg@resetbb{%
171   \global\wg@bb@minx=16000pt\relax%
172   \global\wg@bb@miny=16000pt\relax%
173   \global\wg@bb@maxx=-16000pt\relax%
174   \global\wg@bb@maxy=-16000pt\relax%
175 }
```

\old@pgf@protocolsize

Save PGF's bounding box algorithm

```
176 \let\old@pgf@protocolsize\pgf@protocolsizes
```

\wg@protocolsizes

Our bounding box algorithm

```

177 \def\wg@protocolsizes#1#2{%
178   \old@pgf@protocolsize{#1}{#2}
179   \ifwg@notrelevantforpathsizel\else%
180   \ifdim#1<\wg@bb@minx\global\wg@bb@minx#1\fi%
181   \ifdim#1>\wg@bb@maxx\global\wg@bb@maxx#1\fi%
182   \ifdim#2<\wg@bb@miny\global\wg@bb@miny#2\fi%
183   \ifdim#2>\wg@bb@maxy\global\wg@bb@maxy#2\fi%
184   \fi
185 }

```

Environment that tracks the local bounding box

```

186 \newenvironment{getbbl}{%
187   \wg@resetbb%
188   \wg@notrelevantforpathsizel\false%
189   \global\let\pgf@protocolsizes\wg@protocolsizes}{%
190   \gdef\pgf@sh@ns@L{rectangle}
191   \gdef\pgf@sh@np@L{%
192     \def\southwest{\pgfqpoint{\the\wg@bb@minx}{\the\wg@bb@miny}}%
193     \def\northeast{\pgfqpoint{\the\wg@bb@maxx}{\the\wg@bb@maxy}}%
194   }
195   \gdef\pgf@sh@nt@L{{1}{0}{0}{1}{0pt}{0pt}}
196   \gdef\pgf@sh@pi@L{\pgfpictureid}
197   \global\let\pgf@protocolsizes\old@pgf@protocolsize
198 }

```

Environment to track global bounding box

```

199 \newenvironment{getbb}{%
200   \wg@resetbb%
201   \wg@notrelevantforpathsizel\false%
202   \global\let\pgf@protocolsizes\wg@protocolsizes}{%
203   \gdef\pgf@sh@ns@M{rectangle}
204   \gdef\pgf@sh@np@M{%
205     \def\southwest{\pgfqpoint{\the\wg@bb@minx}{\the\wg@bb@miny}}%
206     \def\northeast{\pgfqpoint{\the\wg@bb@maxx}{\the\wg@bb@maxy}}%
207   }
208   \gdef\pgf@sh@nt@M{{1}{0}{0}{1}{0pt}{0pt}}
209   % \pgfgettransform\pgf@temp%
210   % \xdef\pgf@sh@nt@M{\pgf@temp}
211   % \pgfgettransformentries{\wg@tmp@a}{\wg@tmp@b}{\wg@tmp@c}{\wg@tmp@d}{\pgf@temp}{\pgf@temp}
212   % \message{^^JTransform of M: \meaning\pgf@temp}
213   % \xdef\pgf@sh@nt@M{{\wg@tmp@a}{\wg@tmp@b}{\wg@tmp@c}{\wg@tmp@d}{0pt}{0pt}}%
214   % \message{^^JTransform of M: \meaning\pgf@sh@nt@M}
215   \gdef\pgf@sh@pi@M{\pgfpictureid}
216   \global\let\pgf@protocolsizes\old@pgf@protocolsize
217 }

```

5.2.5 Some utilities to get bounding boxes and the like

All coordinates, and such are recorded in centimetres. It is worth remembering that the Tikz coordinate system has the y axis point upward, while typical image software has the y axis point down. `pdftocairo` typically assumes a 150 PPI (pixels-per-inch) resolution.

That means that scaling factor becomes

$$\frac{150\text{pixel}}{2.54\text{cm}} = 59.055\frac{\text{pixel}}{\text{cm}}$$

Since we want to write all dimensions in centimetres, we need to be able to convert pt dimensions to centimetres. We make two macros to do that for us.

The exact definition of 1pt is

$$1\text{pt} = \frac{249}{250}12''\frac{1}{864} = \frac{83}{6000}1'' = 0.03513\bar{6}$$

```
218 % 2.54 / 72.27 = .03514598035145980351
219 % \def\wg@pt@to@cm#1{\pgfmathparse{#1 * 0.0351460}}
220 \def\wg@pt@to@cm#1{\pgfmathparse{#1 * 0.0351367}}
221 \def\ptpoint@to@cm#1#2{%
222   \wg@pt@to@cm{#1}\edef\x{\pgfmathresult}%
223   \wg@pt@to@cm{#2}\edef\y{\pgfmathresult}}
```

The next macro gets an anchors coordinates and stores them (in units of centimetres) in `\tmp@x` and `\tmp@y`

```
224 \def\wg@get@nchor#1#2{%
225   \wg@dbg{2}{Get anchor coordinates #1.#2}
226   \pgfpointanchor{#1}{#2}%
227   \wg@dbg{2}{ '\the\pgf@x', '\the\pgf@y' }
228   \pgfgetlastxy\tmp@x\tmp@y%
229   \wg@dbg{2}{ '\tmp@x', '\tmp@y' }
230   \wg@pt@to@cm{\tmp@x}\edef\tmp@x{\pgfmathresult}
231   \wg@pt@to@cm{\tmp@y}\edef\tmp@y{\pgfmathresult}
232 }
```

This does the same as above, but transform to the global coordinate system.

```
233 \def\wg@get@global@nchor#1#2{%
234   \pgfpointanchor{#1}{#2}%
235   \pgfgetlastxy\tmp@x\tmp@y%
236   \pgfpointtransformed{\pgfpoint{\tmp@x}{\tmp@y}}
237   \pgf@xa=\pgf@x
238   \pgf@ya=\pgf@y
239   %% \message{^^JAnchor #1.#2 @ (\the\pgf@xa,\the\pgf@ya)}
240   \wg@pt@to@cm{\the\pgf@xa}\edef\tmp@x{\pgfmathresult}
241   \wg@pt@to@cm{\the\pgf@ya}\edef\tmp@y{\pgfmathresult}
242 }
```

This records the bounding box given by a named node. The result is stored in the macros `\llx`, `\lly`, `\urx`, and `\ury`.

```
243 \def\wg@get@bb#1{%
244   \wg@get@nchor{#1}{south west}
245   \edef\llx{\tmp@x}
246   \edef\lly{\tmp@y}
247   \wg@get@nchor{#1}{north east}
248   \edef\urx{\tmp@x}
249   \edef\ury{\tmp@y}
250 }
```

```

251 \def\wglogbb#1{%
252   \wg@get@bb{#1}%
253   \message{^^J'#1' BB: (\llx,\lly) x (\urx,\ury)^^J}}

```

5.2.6 Other Tikz utilities

tikz/reverseclip

A reverse clipping path. This is used to cut out stuff outside of path defined.

```

254 \tikzstyle{reverseclip}=[insert path={(current bounding box.north east) --
255   (current bounding box.south east) --
256   (current bounding box.south west) --
257   (current bounding box.north west) --
258   (current bounding box.north east)}]

```

tikz/clip even odd rule

A reverse clipping path

```

259 \tikzset{
260   clip even odd rule/.code={\pgfseteorule}, % Credit to Andrew Stacey
261 }

```

tikz/invclip

Inverse clipping. This should be an option *after* the path to do the inverse clipping by. This works by adding a *large* (page) path to the current path, and then use that as clipping.

```

262 \tikzset{
263   invclip/.style={
264     clip,insert path=
265     [clip even odd rule]{
266       [reset cm](-\maxdimen,-\maxdimen)rectangle(\maxdimen,\maxdimen)
267     }
268   },
269 }

```

save clip

An option for use with sub-elements of NATO App 6(c) or chit nodes. This will save the current path as a clipping path for the next paths to be drawn in the sub-element

```

270 \newif\ifwg@s@ve\wg@s@vefalse
271 \tikzset{
272   save clip/.is choice,
273   save clip/true/.code={\global\wg@s@vetrue},
274   save clip/false/.code={\global\wg@s@vefalse},
275   save clip/.default={true},

```

```

276 save clip/.initial={false},
277 }

```

scale line widths

Scales any line width specified in the node options.

Use like

```

\tikzset{
  some/.style={
    scale line widths,
    line width=1pt}
}

```

Note that the order is important.

```

278 %      Save pgf rounded corners macro
279 %      \let\wg@pgfsetcornersarced\pgfsetcornersarced
280 \def\wg@setcornersarced#1{%
281   \def\arg{#1}%
282   \let\isarched\relax%   Cannot set \ifpgf@arccorners directly inside
283   %   other \if
284   \ifx\arg\@empty\else%
285     \edef\pgf@corner@arc{{#1}{#1}}%
286     \let\isarched\pgf@arccornerstrue%
287     \ifdim#1=0pt%
288       \let\isarched\pgf@arccornersfalse%
289     \fi%
290   \fi%
291   \isarched}
292 \newdimen\wg@lw@scaled\wg@lw@scaled=1pt
293 \def\wg@getscale{%
294   \pgfgettransformentries{%
295     \wg@jaca}{%
296     \wg@jacb}{%
297     \wg@jacc}{%
298     \wg@jacd}{%
299     \wg@tmp}{%
300     \wg@tmp}%
301   \pgfmathsetmacro{\wg@jac}{sqrt(abs(\wg@jaca*\wg@jacd-\wg@jacb*\wg@jacc))}%
302   \wg@dbg{4}{Scale is \wg@jac}
303   \xdef\wg@scale{\wg@jac}}
304 \def\wg@scaled#1{%
305   \wg@getscale%
306   \wg@dbg{4}{Scaling #1 by \wg@scale}
307   \pgfmathsetmacro{\wg@tmp}{\wg@scale*#1}%
308   \xdef\wg@tmp{\wg@tmp}%
309   \xdef\wg@lw@scale{\wg@tmp}%
310   \wg@dbg{4}{Scaled #1 -> \wg@tmp}}
311 %% \message{^^JRounded corners: \meaning\pgfsetcornersarced}
312 \tikzset{

```

```

313 %% Get current scale and store in \wg@scale
314 get scale/.code={\wg@getscale},
315 scale line widths/.style={%
316 /utils/exec=\def\tikz@semiaddlinewidth##1{%
317   \wg@scaled{##1}
318   \wg@lw@scaled=\wg@tmp pt
319   \tikz@adoption{\pgfsetlinewidth{\wg@lw@scaled}}}%
320   \wg@dbg{4}{Added scaled option \wg@tmp}
321   \pgfmathsetlength\pgflinewidth{\wg@tmp pt}
322   \wg@dbg{4}{Did set line width \wg@tmp pt}
323 }
324 },
325 scale rounded corners/.style={%
326 /utils/exec=\def\pgfsetcornersarced##1{%
327   \pgf@process{##1}%
328   \pgf@xa=\pgf@x%
329   \wg@scaled{\the\pgf@xa}%
330   % \tikz@adoption{\wg@setcornersarced{\wg@tmp pt}}}%
331   \wg@dbg{4}{Scaled rounded corners: \the\pgf@xa -> \wg@tmp}%
332   \wg@setcornersarced{\wg@tmp pt}%
333 }
334 },
335 relative line width/.style={%
336 /utils/exec=\def\tikz@semiaddlinewidth##1{%
337   \wg@dbg{4}{Relative line width #1 times ##1}%
338   \pgfmathsetmacro{\wg@lv}{#1*##1}%
339   \tikz@adoption{\pgfsetlinewidth{\wg@lv pt}}}%
340   \pgfmathsetlength\pgflinewidth{\wg@lv pt}}
341 }

```

sub pic actions

This is key that propagates actions to sub pictures of pictures. The normal `pic actions` cannot be used as it causes an infinite loop.

```

342 \tikzset{
343   sub pic actions/.code={%
344     \tikz@picmode%
345     \edef\opts{%
346       \iftikz@mode@draw draw,\else draw=none,\fi
347       \iftikz@mode@fill fill\else fill=none\fi}
348     \wg@dbg{5}{^^JSub Mode: \meaning\tikz@picmode \meaning\opts}
349     \pgfset{/tikz/.cd}
350     \pgfkeysalsofrom{\opts}
351   }}

```

wg/debug show

Show debugging information

```

352 \tikzset{

```

```

353 wg/debug show/.code={%
354   \extractcolorspec{pgfstrokecolor}{\wg@tmp@fg}
355   \def\wg@tmp@bg{none}
356   \@ifundefinedcolor{pgffillcolor}{}{
357     \extractcolorspec{pgffillcolor}{\wg@tmp@bg}}
358   \beginpgfgroup
359   \tikz@mode
360   \wargamedbglvl=#1
361   \wg@dbg{3}{Drawing with w/stroke ‘\wg@tmp@fg’
362     (\tikz@strokecolor,\iftikz@mode@draw\else not\space\fi drawing)
363     and fill ‘\wg@tmp@bg’ (\tikz@fillcolor,\iftikz@mode@fill\else
364     not\space\fi filling)}
365   \endpgfgroup
366 }
367 }

```

5.2.7 Random IDs

This macro sets the macro `\wg@uuid` to some random hex number.

```

368 \def\wg@random@id{%
369   \def\wg@uuid{}
370   \foreach \i in {1,...,8}{%
371     \pgfmathparse{Hex(random(0,15))}
372     \xdef\wg@uuid{\wg@uuid\pgfmathresult}}

```

5.2.8 VASSAL icons

Some icons that may be useful in VASSAL. We put them here so they may be used in manuals and the like too.

First, the line style

```

373 \tikzset{
374   trash can line/.style={scale line widths,scale rounded corners,
375     line width=.5mm,->},
376 }

```

Then, the body and lid of a trash can.

```

377 \tikzset{
378   trash can body/.pic={%
379     \path[fill=black,scale line widths,scale rounded corners,
380       rounded corners=.05cm]
381     (-.3,.2) ---+.6,0) ---+(-.1,-.7) ---+(-.4,0) --cycle;
382     \path[fill=white]
383     (-.025,-.4) arc(180:360:.025) ---+( 0,.5) arc(0:180:.025) --cycle;
384     \path[fill=white]
385     (-.125,-.4) arc(180:360:.025) ---+(-.07,.5) arc(0:180:.025) --cycle;
386     \path[fill=white]
387     (.075,-.4) arc(180:360:.025) ---+( .07,.5) arc(0:180:.025) --cycle;
388   },
389   trash can lid/.pic={%
390     \path[fill=black,scale line widths,scale rounded corners,

```

```

391 rounded corners=.05cm]
392 (-.35,.23)----+.7,0)----+(-.07,.07)----+(-.56,0)--cycle;
393 \path[fill=black]
394 (-.15,.3) ----+.05,0) ----+(0,.05) ----+.2,0) ----+(0,-.05)
395 ----+.05,0) ----+(0,.05) arc(0:90:.05) ----+(-.2,0) arc(90:180:.05)
396 --cycle;
397 },
398 }

```

Then, a closed and open trash can

```

399 \tikzset{
400 trash can/.pic={
401 \pic{trash can body};
402 \pic{trash can lid};
403 },
404 trash can open/.pic={
405 \pic{trash can body};
406 \pic[rotate=-30] at (0,.1) {trash can lid};
407 },
408 }

```

Now we can use that to generate some useful icons.

```

409 \tikzset{
410 eliminate icon/.pic={
411 \pic{trash can open};
412 \draw[trash can line,color=red!50!black]
413 (-.5,.2) to[looseness=1.5] (-.1,.23);
414 },
415 restore icon/.pic={
416 \pic{trash can open};
417 \draw[trash can line,<,color=green!50!black]
418 (-.5,.2) to[looseness=1.5] (-.1,.23);
419 },
420 pool icon/.pic={
421 \pic{trash can};
422 },
423 }

```

These icons does not use the trash can picture.

```

424 \tikzset{
425 flip icon/.pic={
426 \draw[scale line widths,scale rounded corners,
427 line width=1mm,->,color=blue!50!black]
428 (-.5,-.5) arc(180:0:.5);% (.5,-.5);
429 },
430 pics/oob icon/.style n args={2}{code={%
431 \begin{scope}[box/.style args={##1,##2,##3,##4}{
432 minimum width=##1cm,
433 minimum height=##2cm,
434 fill=##3,
435 anchor=##4,

```

```

436     draw=gray!50!black,
437     scale line widths,
438     line width=.5pt,
439     transform shape},
440   under/.style={
441     below=.05cm of ##1}
442 ]
443 \node[box={.5,.2,#1,north west,fill=#1}] (r1) at (.05,.45) {};
444 \node[under=r1.south west,box={.3,.25,#1,north west}] (r2) {};
445 \node[under=r2.south west,box={.2,.3,#1,north west}] (r3) {};
446 \node[box={.2,.4,#2,north east}] (l1) at (-.05,.45) {};
447 \end{scope}
448 }
449 }
450 }

```

5.3 The wgexport class

This document class is used for exporting game component to be used in a VASSAL module libraries.

Class identification and load wargame package

```

451 \ProvidesClass{wgexport}
452 \PassOptionsToClass{multi=tikzpicture,varwidth=false}{standalone}
453 \DeclareOption{noterrainpic}{%
454   \PassOptionsToPackage{\CurrentOption}{wargame}}
455 \DeclareOption{terrainpic}{%
456   \PassOptionsToPackage{\CurrentOption}{wargame}}
457 \DeclareOption*{%
458   \PassOptionsToClass{\CurrentOption}{standalone}}
459 \ProcessOptions\relax
460 \LoadClass{standalone}
461 \RequirePackage{wargame}

```

We need a few utilities before we get to the actual environment. First, we need a tools to write out literal left and right curly braces. We do a bit of catcode hackery to accomplish that.

```

462 \begingroup
463 \catcode'\^^I=12
464 \def\@tabchar{^^I}
465 \catcode'<=1 \catcode'>=2
466 \catcode'={12 \catcode'}=12
467 \gdef\@lbchar{<}
468 \gdef\@rbchar{>}
469 \endgroup

```

Above, we temporarily set the tab, and left and right curly brace characters to be regular letters (12), and the catcodes of less than and greater than to be those of left and right curly braces respectively. We then define the macros \@tabchar, \@lbchar, and \@rbchar to produce literal characters. \LaTeX already has \@percentchar.

Everything we do should go inside this environment. The single optional argument is the file name stem of the output JSON file.

```

470 \newenvironment{imagelist}[1][\jobname]{%

```

```

471 \newwrite\mk@out%
472 \def\mk@i{}%
473 \def\mk@w{\immediate\write\mk@out}%
474 \immediate\openout\mk@out=#1.json
475 \mk@w{[]
476 }{
477 \mk@w{\mk@i \@lbchar "name":"End of list", "category": "<<eol>>",
478     "subcategory": "" \@rbchar }
479 \mk@w{]}
480 \immediate\closeout\mk@out
481 }

```

Preceed all images (tikzpicture) with this command

First argument is the name of the image. This can be anything. Note that for counters, if the name ends in **flipped** then it is considered the backside of a counter.

Second argument is the type of image. Recognised types are

- **board** for boards
- **oob** for OOBs
- **chart** for charts
- **counter** for counters
- **front** for front page

Other types can be used, and the images will be exported, but the Python script pays no particular attention to those then. Use for example to prepare images for help or the like.

The third argument is the sub type. This is most relevant for the counters. Sub types can be anything, but since the counters will receive different prototypes based on the sub type, it makes sense to divide into sub types a la

- **factions**
- **common markers**

The faction sub types should just be the name of the faction. E.g., Allies, Axis, Soviet, NATO, Warsaw Pact. Spaces should not matter.

For common markers, there are a few names that are recognised specifically by the Python script. These are

- **common**
- **all**
- **marker**
- **markers**

Counters that has these sub-types will no be considered to belong to any faction.

Note that the Python script uses the faction names to guess the players of the game, and uses them in several places.

```

482 \def\info{%
483   \@ifstar{\@@info{,}}{\@@info{\@rbchar,}}
484 \def\@@info#1#2#3#4{%
485   \chit@dbg{2}{Making image '#2' of type '#3'/'#4' on page \thepage}%
486   \mk@w{ \@lbchar}%
487   \mk@w{ \space "name": "#2",}%
488   \mk@w{ \space "category": "#3",}%
489   \mk@w{ \space "subcategory": "#4", }%
490   \mk@w{ \space "number": \thepage #1}%
491   \let\oldmk@i\mk@i%
492   \ifx#1,\relax\edef\mk@i{\mk@i\space\space}\fi
493 \def\endinfo{%
494   \let\mk@i\oldmk@i%
495   \mk@w{ \space \@rbchar,}}

```

Make separate images for each counter (single sided).

First optional argument is the group to put the chits into. Second optional argument is options to give to each Tikz picture environment. Third, mandatory, argument is the list of chit identifiers to render.

```

496 \def\wg@add@drop@margin{%
497   \@ifundefined{wg@drop@margin}{-}{
498     \dimen0=\wg@drop@margin
499     % \ifwg@chit@drop
500     \ifdim\dimen0>0pt%
501       \path ($(current bounding box.north east)+(45:\wg@drop@margin)$)
502       -- ($(current bounding box.south west)+(225:\wg@drop@margin)$);
503     \fi}}
504 \def\chitimages{%
505   \@ifnextchar[{\@@chitimages}{\chitimages []}]
506 }%
507 \def\@chitimages[#1]{%
508   \@ifnextchar[{\@@chitimages[#1]}{\@@chitimages[#1] []}]
509 }%
510 \def\@@chitimages[#1][#2]#3{%
511   \begingroup%
512   \let\chit@report\do@chit@report%
513   \let\ NATOapp@report\do@NATOapp@report%
514   \chit@dbg{2}{chits to make images of '#3'}%
515   \foreach[count=\ti from 0] \t/\x in #3{%
516     \chit@dbg{2}{^^JRow: '\t' ('\x')}
517     \ifx\t\empty\else% Ignore empty rows
518     \chit@dbg{5}{^^JSubcategory: '\x' (default '#1')}
519     % Take sub-category or default
520     \ifx\t\x\def\x{#1}\else\ifx\x\empty\def\x{#1}\fi\fi
521     \foreach \u/\m in \t{%
522       \ifx\u\empty\else% Ignore empty cells
523       \ifx\u\chit@blank\else%
524       \ifx\u\chit@oob@vspacer\else%
525       \ifx\u\chit@oob@spacer\else%
526       \chit@dbg{2}{Next chit '\u' with possible multiplicity
527         '\m'}%
528       \chit@dbg{1}{Next chit '\u' not '\chit@blank',
529         '\chit@oob@vspacer', '\chit@oob@spacer'}

```

```

530         \ifx\m\empty\def\m{1}\fi% If no multiplicity defined
531         \ifx\u\m\def\m{1}\fi% If the same as unit
532         \chit@dbg{2}{Next chit '\u' multiplicity '\m'}%
533         %% We only make one copy of the chit, since we can duplicate
534         %% it in VASSAL
535         \begin{info}*{\u}{counter}{\x}
536             \nopagecolor%
537             \gdef\wg@drop@margin{0pt}%
538             \begin{tikzpicture}[chit has drop=false,#2]
539                 \chit[\u=\ti]%
540                 \wg@add@drop@margin%
541             \end{tikzpicture}
542         \end{info}%
543         %% \foreach \n in {1,...,\m}{% Make a number of copies
544         %% \ifx\u\chit@blank%
545         %% \chit@dbg{3}{Ignoring blank chit:\u}%
546         %% \else%
547         %% \info{\u}{counter}{#2}
548         %% \begin{tikzpicture}
549         %% \chit[\u=\ti](\c,\r)%
550         %% \end{tikzpicture}
551         %% \fi%
552         %% }%
553     \fi%
554 \fi%
555 \fi%
556 \fi%
557 }%
558 \chit@dbg{2}{End of inner loop}%
559 \fi%
560 }%
561 \chit@dbg{2}{End of outer loop}%
562 \endgroup%
563 }

```

Make separate images for each counter (double sided). The back-side counters must be defined by append ‘ flipped’ the front face name.

First optional argument is the group to put the chits into. Second optional argument is options to give to each Tikz picture environment. Third, mandatory, argument is the list of chit identifiers to render.

```

564 \def\doublechitimages{%
565   \@ifnextchar[{\@doublechitimages}{\doublechitimages[]}%
566 }%
567 \def\@doublechitimages[#1]{%
568   \@ifnextchar[{\@@doublechitimages[#1]}{\@@doublechitimages[#1] []}%
569 }%
570 \def\@@doublechitimages[#1][#2]#3{%
571   \begingroup%
572   \let\chit@report\do@chit@report%
573   \let\natoapp@report\do@natoapp@report%
574   \foreach[count=\ti from 0] \t/\x in #3{%
575     \ifx\t\empty\else% Ignore empty rows
576       \chit@dbg{5}{^JSubcategory: '\x' (default '#1')}

```

```

577 % Take sub-category or default
578 \ifx\t\x\def\x{#1}\else\ifx\x\empty\def\x{#1}\fi\fi
579 \foreach \u/\m in \t{%
580   \ifx\u\empty\else% Ignore empty cells
581     \ifx\u\chit@blank\else%
582       \ifx\u\chit@oob@vspacer\else%
583         \ifx\u\chit@oob@spacer\else%
584           \chit@dbg{2}{Next chit '\u' with possible multiplicity '\m'}%
585           \ifx\m\empty\def\m{1}\fi% If not multiplicity defined
586           \ifx\u\m\def\m{1}\fi% If the same as unit
587           \chit@dbg{2}{Next chit '\u' multiplicity '\m'}%
588           %% Flipped chit
589           \edef\s{\u\space flipped}%
590           %% We only make one copy of the chit, since we can duplicate
591           %% it in VASSAL
592           \begin{info}*{\u}{counter}{\x}%
593             \nopagecolor%
594             \gdef\wg@drop@margin{0pt}%
595             \begin{tikzpicture}[chit has drop=false,#2]%
596               \chit[\u=\ti]%
597               \wg@add@drop@margin%
598             \end{tikzpicture}%
599           \end{info}%
600           \begin{info}*{\s}{counter}{\x}%
601             \nopagecolor%
602             \begin{tikzpicture}[chit has drop=false,#2]%
603               \chit[\s=\ti]%
604               \wg@add@drop@margin%
605             \end{tikzpicture}%
606           \end{info}%
607           %% \foreach \n in {1,...,\m}{% Make a number of copies
608           %% \ifx\u\chit@blank%
609           %%   \chit@dbg{3}{Ignoring blank chit:\u}%
610           %% \else%
611           %%   \info{\u}{counter}{#2}
612           %%   \begin{tikzpicture}
613           %%     \chit[\u=\ti](\c,\r)%
614           %%   \end{tikzpicture}
615           %% \fi%
616           %% }%
617         \fi%
618       \fi%
619     \fi%
620   \fi%
621 }%
622 \fi%
623 }%
624 \endgroup%
625 }

```

Special for boards, we have the environment `boardimage`. Like `\info` we must specify the name and sub-category of the board, but the category is assumed to be `board` (though the optional argument can specify a different category). Within this environment some specific styles are defined that allows the user to specify VASSAL zones on the board.

For this to work properly, the parent `tikzpicture` *must* have the style `zoned`. This style will record the bounding box of the picture which we will need to calculate VASSAL coordinates later on.

Other styles are `zone scope`, to be applied to `scopes` in the picture, and `zone path` to be applied to `paths` (or `\draw`, `\fill`, or the like) in the picture. These will record coordinates of these elements inside the picture. The Python script will then define VASSAL zones based on these coordinates.

For `zone scope` applied to a `scope`, what is recorded are

- The current coordinate transformation matrix
- The current translation
- The bounding box, within the current transformation and translation.

To define a zone in the board, simply enclose it in a

```
\begin{scope}[zone scope=name]
...
\end{scope}
```

The $\langle name \rangle$ will be the name of the scope. If this contains the sub-string `hex` (upper, lower, or mixed case), then the zone will get a hex grid with numbering attached to it.

If the $\langle name \rangle$ contains the sub-string `turn` (any case), then it is assumed to be a turn track and a rectangular grid will be attached. The column and row separator will be set to `T`, so that it won't collide with the main zone. Similar if $\langle name \rangle$ contains `oob`, except the separator is set to `O`.

If $\langle name \rangle$ contains the sub-string `pool`, then it is assumed to be a pool of counters, and *no* grid is attached.

For `zone path` applied to a `path`, what is recorded is the path coordinates (as straight line segments) in the global coordinate system.

Both styles take one argument — the name of the zone. If that name contains the sub-string `hex` anywhere in the name, then the zone is assumed to contain a hex grid. Otherwise, a rectangular grid (of fixed size) will be applied to it.

The environment `boardimage` also records the coordinate options currently in use (keys `hex/first row is`, `hex/row direction is`, and so on), as well as the current label option (as defined by `every hex` or `every hex node`).

The information extracted is written to the `\jobname.json` file as a sub-object (with name given by the first optional argument) of the image object. In that way, we can later on easily get the information from our catalogue of images.

Note, the styles `zoned`, `zone scope`, and `zone path` are defined in `wargame` to be dummies so that one can have them in the definition of the board without impact.

```
626 \def\mk@transform{%
627   \pgfgettransformentries{\mxx}{\mxy}{\myx}{\myy}{\ptdx}{\ptdy}
628   \wg@pt@to@cm{\ptdx}\edef\dx{\pgfmathresult}
629   \wg@pt@to@cm{\ptdy}\edef\dy{\pgfmathresult}
630   \mk@w{ \mk@i "xx": \mxx,}
631   \mk@w{ \mk@i "xy": \mxy,}
632   \mk@w{ \mk@i "yx": \myx,}
633   \mk@w{ \mk@i "yy": \myy,}
634   \mk@w{ \mk@i "dx": \dx,}
635   \mk@w{ \mk@i "dy": \dy,}
636 }
```

```

637 \def\mk@bb#1{%
638   \wg@get@bb{#1}
639   \mk@w{ \mk@i "lower left": [\llx,\lly],}
640   \mk@w{ \mk@i "upper right": [\urx,\ury],}
641   \begingroup
642     \wg@get@global@nchor{#1}{south west}
643     \mk@w{ \mk@i "global lower left": [\tmp@x,\tmp@y],}
644     \wg@get@global@nchor{#1}{north east}
645     \mk@w{ \mk@i "global upper right": [\tmp@x,\tmp@y]}
646   \endgroup
647 }
648 \def\mk@pos#1(#2){%
649   \wg@dbg{10}{^^JMarking '#2' with '#1' - start}
650   \coordinate[transform shape] (tmp) at (#2) {};
651   \wg@get@nchor{tmp}{center}
652   \wg@dbg{3}{^^JMarking '#2' with '#1' - '\tmp@x',\tmp@y'}
653   \tikzset{zone point={#1}{\tmp@x}{\tmp@y}}
654 }

```

For the key zone path to work, we need to be able to record the path as it moves along. To that end, we make a custom decoration that will do that for us, and, once the path is finished, write the path to our JSON file.

```

655 \pgfdeclaredecoration{record path construction}{initial}{%
656   \state{initial}[width=0pt,next state=more]{
657     \begingroup
658       \pgf@decorate@inputsegment@first
659       \ptpoint@to@cm{\the\pgf@x}{\the\pgf@y}
660       \xdef\wg@path{[\x,\y]}
661     \endgroup
662   }%
663   \state{more}[width=\pgfdecoratedinputsegmentremainingdistance]{%
664     \begingroup
665       \pgf@decorate@inputsegment@last
666       \ptpoint@to@cm{\the\pgf@x}{\the\pgf@y}
667       \xdef\wg@path{\wg@path, [\x,\y]}
668     \endgroup
669   }
670   \state{final}{%
671     \begingroup
672       \pgf@decorate@inputsegment@last
673       \ptpoint@to@cm{\the\pgf@x}{\the\pgf@y}
674       \xdef\wg@path{\wg@path, [\x,\y]}
675     \endgroup
676     \mk@w{ \mk@i "zone path \wg@record@path@name": \lbchar}
677     \mk@w{ \mk@i\space "path": [\wg@path] \rbchar,}
678   }
679 }%

```

Now we can make our environment

The first thing we do is to use the `\info` macro to mark the image. Then we open our JSON file. We make a short-hand macro for writing to that file. The macro `\bd@i` records the current indentation (which is important in JSON)

```

680 \newenvironment{boardimage}[3][board]{%
681   \def\bd@n{#2}
682   \newcount\mk@point
683   \mk@point=0
684   \let\oomk@i\mk@i%
685   \let\markpos\mk@pos%

```

Then, to extract the label option, we make a dummy node with the styles `every hex` and `every hex node`, so we can extract that option.

```

686 \info{dummy}{<<dummy>>}{}%
687 %\tikz{}%
688 \tikz{\scoped[%
689   every hex/.try,every hex node/.try,
690 ]{%
691   \def\hex@col{0}%
692   \def\hex@row{0}%
693   \node[hex,inner sep=0,outer sep=0]{%
694     %\message{^^JHex label: '\meaning\hex@label'}%
695     \global\let\mk@label\hex@label}}}%

```

The next thing we do is to make an object. The first things we put in are the units used (“cm”), and the grid options.

```

696 \info*{#2}{#1}{#3}%
697 \mk@w{ \mk@i "zones": \@lbchar}%
698 \edef\mk@i{\mk@i\space}
699 %% Everything is made into centimeters
700 \mk@w{ \mk@i "units": "cm",}
701 \hex@dbg{3}{Label: '\meaning\mk@label'}
702 \ifundefined{mk@label}{\mk@w{ \mk@i "labels": "\mk@label",}}
703 %% Write out coordinate options as "coords" object
704 \mk@w{ \mk@i"coords": \@lbchar}%
705 \mk@w{ \mk@i "row": \@lbchar}%
706 \mk@w{ \mk@i\space "offset": \hex@coords@row@off,}%
707 \mk@w{ \mk@i\space "factor": \hex@coords@row@fac \@rbchar,}%
708 \mk@w{ \mk@i "column": \@lbchar}%
709 \mk@w{ \mk@i\space "offset": \hex@coords@col@off,}%
710 \mk@w{ \mk@i\space "factor": \hex@coords@col@fac,}%
711 \mk@w{ \mk@i\space "top short": "\hex@top@short@col",}%
712 \mk@w{ \mk@i\space "bottom short": "\hex@bot@short@col" \@rbchar}%
713 \mk@w{ \mk@i \@rbchar,}%

```

We then monkey-patch `\boardframe` to also output coordinates to our JSON file. Note that this will probably be embedded in a different object.

```

714 %%
715 \let\oldbo@rdframe\bo@rdframe%
716 \def\bo@rdframe[##1](##2)(##3){%
717   \oldbo@rdframe[##1](##2)(##3)%
718   \mk@w{ \mk@i"board frame": \@lbchar}
719   \mk@w{ \mk@i\space "lower left": [\llx,\lly],}
720   \mk@w{ \mk@i\space "upper right": [\urx,\ury],}
721   \mk@w{ \mk@i\space "margin": \margin,}
722   \mk@w{ \mk@i\space "width": \w,}
723   \mk@w{ \mk@i\space "height": \h \@rbchar,}%

```

Next, we make the style `zoned` to be applied to the `tikzpicture` environment. This records the bounding box of the full picture.

```

724 \tikzset{
725   zoned/.code={% Apply to whole picture
726     \pgfkeys{%
727       % This needs to be done in the picture!
728       /tikz/execute at end picture={%
729         \mk@w{ \mk@i "zoned": \@lbchar}
730         \mk@transform%
731         \mk@bb{current bounding box}
732         \mk@w{ \mk@i \@rbchar,}
733       }
734     }
735   },

```

The next style is the `zone scope`. At the start of the scope we record the current transformation matrix. Then we install a handler to extract the bounding box at the end of the scope. Note that we increase indentation here.

```

736   zone scope/.code={%
737     \mk@w{ \mk@i "zone scope ##1": \@lbchar}
738     \let\omk@i\mk@i
739     \edef\mk@i{\mk@i\space}
740     \mk@transform%
741     %\bd@w{ \@rbchar,}
742     \gdef\wg@export@box{##1}%
743     \pgfkeys{%
744       /tikz/local bounding box=wg export box,
745       /tikz/execute at end scope={
746         \mk@bb{wg export box}
747         \let\mk@i\omk@i
748         \mk@w{ \mk@i \@rbchar,}},
749     } % pgfkeys
750   }, % zone scope

```

The next style gets the global coordinates of the current (0,0) point - f.ex. in a node - and outputs that

```

751   zone point/.code n args={3}{
752     \pgf@xa=##2 cm
753     \pgf@ya=##3 cm
754     \pgfpointtransformed{\pgfpoint{\pgf@xa}{\pgf@ya}}
755     % \pgfpointtransformed{\pgfpoint{0pt}{0pt}}
756     \pgf@xa=\pgf@x
757     \pgf@ya=\pgf@y
758     \wg@pt@to@cm{\the\pgf@xa}\edef\px{\pgfmathresult}
759     \wg@pt@to@cm{\the\pgf@ya}\edef\py{\pgfmathresult}
760     \advance\mk@point1
761     \global\mk@point=\mk@point
762     \mk@w{ \mk@i "point\the\mk@point": \@lbchar "name": "##1", "type": "point", "coords": [\px,\py]
763       \@rbchar, }
764     %\message{^^JZone point \the\mk@point\space ##1: ##2,##3 -> \px,\py}
765   },
766   zone oob point/.code n args={3}{
767     \pgf@xa=##2 cm

```

```

768     \pgf@ya=##3 cm
769     \advance\pgf@xa.1cm
770     \advance\pgf@ya.1cm
771     \pgfpointtransformed{\pgfpoint{\pgf@xa}{\pgf@ya}}
772     % \pgfpointtransformed{\pgfpoint{0pt}{0pt}}
773     \pgf@xa=\pgf@x
774     \pgf@ya=\pgf@y
775     \wg@pt@to@cm{\the\pgf@xa}\edef\px{\pgfmathresult}
776     \wg@pt@to@cm{\the\pgf@ya}\edef\py{\pgfmathresult}
777     \advance\mk@point1
778     \global\mk@point=\mk@point
779     \mk@w{ \mk@i "point\the\mk@point": \@lchar "name": "##1",
780         "parent": "\wg@export@box", "type": "point", "coords": [\px,\py]
781         \@rbchar, }
782     \%message{^JZone point \the\mk@point\space ##1: ##2,##3 -> \px,\py}
783 },
784 zone global point/.code n args={3}{
785     \advance\mk@point1
786     \global\mk@point=\mk@point
787     \mk@w{ \mk@i "point\the\mk@point": \@lchar "name": "##1", "type": "point", "coords": [\px,\py]
788         \@rbchar, }
789 },

```

The `zone` path style is a bit more simple, but only because the bulk of the work is done in a decoration. We need to be able to pass a name to that decoration, so we make a key for that. The user need not think about that though.

```

790     /pgf/decoration/record path name/.store in=\wg@record@path@name,
791     zone path/.style={%
792         postaction={decorate,decoration={
793             record path construction,
794             record path name=##1}}
795     } % zone path
796 }% tikzset
797 }

```

That finishes the first part of the environment. At the end of the environment, we simply write the name of the picture, and close our JSON output.

```

798 {%
799     \mk@w{ \mk@i "name": "\bd@n" }%
800     \let\mk@i\oomk@i%
801     \mk@w{ \mk@i \@rbchar}%
802     \endinfo%
803 }

```

Make battle markers. Mandatory argument is how many markers, optional is the group to add the markers to.

```

804 \def\wg@gennumberm@rkers#1#2#3#4{
805     \chit@dbg{2}{Numbered markers: Type='##1' Max='##2' Category='##3'}
806     \def\markers{}
807     \def\keys{}
808     \foreach \i in {1,...,#2}{%
809         \xdef\keys{/tikz/#1 \i/.style={/tikz/#1=\i},\keys}
810         \xdef\markers{\markers,#1 \i}}

```

```

811 {%
812 \nopagecolor\pgfkeysalsofrom{\keys}\chitimages[#3][#4]{\markers}}%
813 \tikzset{
814 wg hidden unit/.pic={},
815 wg hidden unit/.style={
816   chit={
817     no chit drop,
818     frame={draw=none,fill=none},
819     full=wg hidden unit}}
820 %
821 % First optional argument are extra styles
822 % Second is category
823 % Third is number of markers
824 %
825 \def\battlemarkers{%
826   \ifnextchar[{\@battlemarkers}{\battlemarkers[]}%
827 }%
828 \def\@battlemarkers[#1]{%
829   \ifnextchar[{\@@battlemarkers[#1]}{\battlemarkers[#1][BattleMarkers]}%
830 }%
831 \def\@@battlemarkers[#1][#2]#3{%
832   \wg@gennumberm@rkers{battle marker}{#3}{#2}{#1}%
833   \chit@dbg{1}{Make a hidden unit and add to Markers category}
834   {%
835     \nopagecolor%
836     \chitimages[Markers]{\wg hidden unit}}%
837   %
838   \info{battle-marker-icon}{icon}{}%
839   \tikz[scale=.7,transform shape,auto icon more/.try]{%
840     \pic{battle marker=0};}%
841   \info{clear-battles-icon}{icon}{%
842     \tikz[scale=.4,transform shape,auto icon more/.try]{%
843       \pic{eliminate icon};
844       \pic[scale=.7,transform shape] at (-.3,0) {battle marker=0};}%
845   }%
846 }

```

Make odds markers. Mandatory argument is a list of odds and fill colours. Optional is the group to add the markers to.

```

847 \def\wg@gencolorm@rkers#1#2#3#4{%
848   \def\markers{}
849   \def\keys{}
850   \foreach \o/\f/\n [count=\i] in {#2}{%
851     \ifx\n\f\def\n{\o}\fi%
852     \ifx\o\f\def\f{white}\fi%
853     \chit@dbg{3}{Colour no 'i' marker '#1 \n' w/fill '\f' text '\o'}%
854     \protected@xdef\keys{/tikz/#1 \n/.style={tikz/#1={\o,\f}},\keys}
855     \xdef\markers{\markers,#1 \n}
856   }%
857   {%
858     \nopagecolor%
859     \pgfkeysalsofrom{\keys}%
860     \chitimages[#3][#4]{\markers}%

```

```

861 }%
862 }%
863 %
864 % First optional argument are extra styles
865 % Second is category
866 % Third is marker list
867 %
868 \def\oddsmarkers{%
869 \@ifnextchar[{\@oddsmarkers}{\oddsmarkers[]}%]
870 }%
871 \def\@oddsmarkers[#1]{%
872 \@ifnextchar[{\@oddsmarkers[#1]}{\oddsmarkers[#1][OddsMarkers]}%]
873 }%
874 \def\@@oddsmarkers[#1][#2]#3{%
875 \wg@engcolorm@rkers{odds marker}{#3}{#2}{#1}%
876 \info{odds-battles-icon}{icon}{%
877 \tikz[scale=.5,transform shape,auto icon more/.try]{%
878 \pic{odds marker={?:?,white}}%
879 \info{resolve-battles-icon}{icon}{%
880 \tikz[scale=.3,transform shape,auto icon more/.try]{%
881 \pic{dice};
882 \pic[scale=1.2,transform shape] at (-.2,-.2) {battle marker=0};}%
883 }

```

Make results markers. Mandatory argument is a list of results and fill colours. Optional is the group to add the markers to.

First optional argument are extra styles Second is category Third is marker list

```

884 \def\resultmarkers{%
885 \@ifnextchar[{\@resultmarkers}{\resultmarkers[]}%]
886 }%
887 \def\@resultmarkers[#1]{%
888 \@ifnextchar[{\@resultmarkers[#1]}{\resultmarkers[#1][ResultMarkers]}%]
889 }%
890 \def\@@resultmarkers[#1][#2]#3{%
891 \wg@engcolorm@rkers{result marker}{#3}{#2}{#1}}%

```

Common icons used by many modules

```

892 \DeclareRobustCommand\commonicons[3] []{%
893 \begingroup%
894 \nopagecolor%
895 \tikzset{auto icon/.style={scale=.4,transform shape,#1}}%
896 %
897 \info{pool-icon}{icon}{%
898 \tikz[auto icon,auto icon more/.try]{\pic{pool icon};}
899 %
900 \info{oob-icon}{icon}{%
901 \tikz[auto icon,auto icon more/.try]{\pic{oob icon={#2}{#3}};%}
902 %
903 \info{flip-icon}{icon}{%
904 \tikz[auto icon,auto icon more/.try]{\pic{flip icon};}%
905 %
906 \info{eliminate-icon}{icon}{%

```

```

907 \tikz[auto icon,auto icon more/.try]{\pic{eliminate icon};}%
908 %
909 \info{restore-icon}{icon}{}%
910 \tikz[auto icon,auto icon more/.try]{\pic{restore icon};}%
911 %
912 \info{dice-icon}{icon}{}%
913 \tikz[auto icon,scale=.9,auto icon more/.try]{\pic{dice};}%
914 %
915 \info{unit-icon}{icon}{}%
916 \tikz[auto icon,scale=.7,auto icon more/.try]{%
917   \chit[fill=#2,
918     symbol={[
919       scale line widths,
920       line width=1pt,
921       faction=friend,
922       command=land,
923       main=infantry,
924       scale=1.3](0,-.15)}]}%
925 %
926 \info{layer-icon}{icon}{}%
927 \begin{tikzpicture}[scale=.25]
928   \foreach \i in {-1,0,1}{
929     \scoped[shift={(0,\i*.15)}]{
930       \draw[black,fill=white] (-.5,0)
931         --(0,.3)--(.5,0)--(0,-.3)--cycle;
932     }
933   }
934 \end{tikzpicture}%
935 %
936 \info{los-icon}{icon}{%
937 \begin{tikzpicture}[scale=.25]
938   \draw[scale line widths,line width=2pt,fill=white](-.5,0)
939     to[out=70,in=110] (.5,0)
940     to[out=-110,in=-70] cycle;
941   \begin{scope}[even odd rule]
942     \clip circle(.2);
943     \fill circle(.2) (125:.18) circle(.1);
944   \end{scope}
945 \end{tikzpicture}%
946 %
947 \endgroup%
948 }

```

5.3.1 Making dice

```
\dice[<tikz-options>][<node-options>]{<name>}{<name>}{<list>}
```

1. *<tikz-options>*
2. *<node-options>*
3. *<name>* - an identifier - e.g., the same as *<shape>*.

4. $\langle shape \rangle$ - one of d4, d6, d8, d10, d12, or d20.

5. $\langle list \rangle$ - list of pairs $\langle value \rangle / \langle printed \rangle$, where $\langle value \rangle$ is the value, and $\langle printed \rangle$ is the shown value. If $\langle printed \rangle$ is left out, then $\langle value \rangle$ is used.

```
949 \def\dice{%
950   \ifnextchar[{\wg@dice}{\wg@dice[]}%
951 }
952 \def\wg@dice[#1]{%
953   \ifnextchar[{\wg@@dice{#1}}{\wg@@dice{#1}[] }%
954 }
955 \def\wg@@dice#1[#2]#3#4#5{%
956   \foreach \v/\p in {#5}{%
957     \info{#3-\v}{die-roll}{#3}
958     \tikz[#1]{
959       %\node[shape=#4,transform shape,draw=none,fill=black,opacity=.5]
960       %at (.05,-.03){};
961       \node[shape=#4,#2,transform shape,
962         chit drop,
963         node contents={\p}
964       ]{};\wg@add@drop@margin{}}}
```

5.3.2 Hooks into chits, etc.

TO BE DONE: We could add hook the hex shape that would allow us to write out the settings for each of these. This would allow us to make data files that contain the information available in the L^AT_EX code.

If one then assumed that for example the upper left corner holds the start-up hex, then one could use that information.

The code below exports the chit information to the JSON file. Together with the battle, odds, and result markers stuff above, this allows the exporter to almost automatically set up battle odds and result calculations. The fields exported are

- Left and right identifiers
- Upper left, upper right, lower left, and lower right identifiers. (some care must be taken if these contains graphics and not just text.)
- Factors
- NATO symbol
 - Faction, command, echelon
 - Mains
 - Left, right, top, and bottom attributes and modifiers
 - Below attribute

The exporter can set up prototypes for NATO types, echelons, etc. The exporter can also set factors as marks on the units.

```
965 \tikzset{
966   zone turn/.store in=\zone@turn,
967   zone mult/.store in=\zone@mult
```

```

968 }
969 \def\@chit@rep@line#1#2{%
970   \ifundefined{#2}{-}{
971     \edef\wg@chit@tmp{\csname #2\endcsname}
972     {\escapechar='/
973       \xdef\tmp{\detokenize\expandafter{\wg@chit@tmp} \@empty}}
974     % \message{^^J\meaning\@tmp -> \meaning\tmp}
975     \mkw{ \mk{i}\space "#1": "\tmp",}}
976
977 \def\do@chit@report{%
978   \chit@dbg{3}{Start of Chit Report}
979   \mkw{ \mk{i} "chit": \@lbchar}
980   \chit@dbg{3}{Report - ID}
981   \ifundefined{id}{-}{\mkw{ \mk{i}\space "id":      "\id", }}%
982   \chit@dbg{3}{Report - Symbol: '\meaning\chit@symbol'}
983   \ifundefined{chit@symbol}{-}{\mkw{ \mk{i}\space "symbol":  "true", }}%
984   \chit@dbg{3}{Report - Full: '\meaning\chit@full'}
985   \@chit@rep@line{full}{chit@full}
986   \chit@dbg{3}{Report - Factors: '\meaning\chit@factors'}
987   \@chit@rep@line{factors}{chit@factors}%
988   \chit@dbg{3}{Report - Left: '\meaning\chit@left'}
989   \@chit@rep@line{left}{chit@left}%
990   \chit@dbg{3}{Report - Right: : '\meaning\chit@right'}
991   \@chit@rep@line{right}{chit@right}%
992   \chit@dbg{3}{Report - Upper left: '\meaning\chit@upper@left'}
993   \@chit@rep@line{upper left}{chit@upper@left}%
994   \chit@dbg{3}{Report - Lower left: '\meaning\chit@lower@left'}
995   \@chit@rep@line{lower left}{chit@lower@left}%
996   \chit@dbg{3}{Report - Upper right: '\meaning\chit@upper@right'}
997   \@chit@rep@line{upper right}{chit@upper@right}%
998   \chit@dbg{3}{Report - Lower right: '\meaning\chit@lower@right'}
999   \@chit@rep@line{lower right}{chit@lower@right}%
1000  \chit@dbg{3}{Report - End comma}
1001  \mkw{ \mk{i}\space "end": 0}
1002  \ifundefined{chit@symbol}{
1003    \mkw{ \mk{i} \@rbchar }
1004  }{
1005    \mkw{ \mk{i} \@rbchar, }% NATOAPP6c will follow
1006  }%
1007  \chit@dbg{3}{End of Chit Report}
1008 }

```

Report out NATO App6 symbol settings

```

1009 \def\do@natoapp@report{%
1010   \mkw{ \mk{i} "natoapp6c": \@lbchar}
1011   \@chit@rep@line{id}{\id}
1012   \@chit@rep@line{faction}{natoapp@fac}
1013   \@chit@rep@line{command}{natoapp@cmd}
1014   \@chit@rep@line{echelon}{natoapp@ech}
1015   \@chit@rep@line{main}{natoapp@main}
1016   \@chit@rep@line{left}{natoapp@left}
1017   \@chit@rep@line{right}{natoapp@right}
1018   \@chit@rep@line{upper}{natoapp@upper}

```

```

1019 \@chit@rep@line{lower}{natoapp@lower}
1020 \@chit@rep@line{below}{natoapp@below}
1021 \mk@w{ \mk@i\space "end": 0}
1022 \mk@w{ \mk@i \@rbchar}
1023 }
1024 \tikzset{
1025   chit drop margin/.store in=\wg@drop@margin,
1026   chit drop shadows/.code={
1027     \pgfkeysalso{%
1028       /tikz/every chit node/.prefix style={chit drop={#1}},
1029       /tikz/chit has drop=true}
1030   },
1031   chit drop shadows/.default=,
1032   marker drop shadows/.code={
1033     \pgfkeysalso{%
1034       /tikz/every battle marker/.prefix style={chit drop={#1}},
1035       /tikz/every odds marker/.prefix style={chit drop={#1}},
1036       /tikz/every result marker/.prefix style={chit drop={#1}},
1037       /tikz/auto icon more/.prefix style={no chit drop}},
1038   marker drop shadows/.default={
1039     chit has drop=false,
1040     shadow xshift=0.04cm,
1041     shadow yshift=-0.04cm,
1042     shadow blur radius=0.04cm}
1043 }
1044
1045

```

5.4 The wargame.hex TikZ library

Used TikZ libraries

```

1046 \RequirePackage{alphalph}
1047 \usetikzlibrary{calc}
1048 \usetikzlibrary{arrows.meta}
1049 \usetikzlibrary{arrows}
1050 \usetikzlibrary{shapes.geometric}
1051 \usetikzlibrary{shapes.symbols}
1052 \usetikzlibrary{shapes.arrows}
1053 \usetikzlibrary{decorations}
1054 \usetikzlibrary{decorations.pathmorphing}
1055 \usetikzlibrary{decorations.pathreplacing}
1056 \usetikzlibrary{decorations.markings}
1057 \usetikzlibrary{wargame.util}

```

\@ifempty

This is a utility macro we will use below.

```

1058 \def\@ifempty#1{\def\temp{#1}\ifx\temp\@empty}

```

5.4.1 Debugging

The counter `\hexdbglvl` sets the debug level, and the macro `\hex@dbg` prints out (conditionally) debug messages.

```
\hexdbglvl
\hex@dbg
```

```
1059 \newcount\hexdbglvl\hexdbglvl=\wargamedbglvl
1060 \def\hex@dbg#1#2{%
1061   \ifnum#1>\hexdbglvl\relax\else\message{^^J#2}\fi}
```

5.4.2 Suppress terrain pictures

```
1062 \@ifundefined{ifhex@terrain@pic}{%
1063   \newif\ifhex@terrain@pic
1064   \hex@terrain@pictrue}{%
1065   \def\markpos#1(#2){}
```

5.4.3 Hex coordinate system

```
\hex@xx
\hex@yy
```

Some offsets along x and y due to offset of every second hex column.

$$\begin{aligned}\delta_x &= \cos 60^\circ \\ \delta_y &= \sin 60^\circ\end{aligned}$$

These numbers are calculated once here and then used several times in the following code.

```
1066 \pgfmathparse{\cos(60)} \xdef\hex@xx{\pgfmathresult}
1067 \pgfmathparse{\sin(60)} \xdef\hex@yy{\pgfmathresult}
1068 \pgfmathparse{\hex@yy*\cos(30)}\xdef\hex@e@xx{\pgfmathresult}
1069 \pgfmathparse{\hex@yy*\sin(30)}\xdef\hex@e@yy{\pgfmathresult}
1070 \newdimen\hex@radius\hex@radius=1cm
1071 \newdimen\hex@dx \expandafter\hex@dx=\hex@xx cm
1072 \newdimen\hex@dy \expandafter\hex@dy=\hex@yy cm
1073 \newdimen\hex@e@dx \expandafter\hex@e@dx=\hex@e@xx cm
1074 \newdimen\hex@e@dy \expandafter\hex@e@dy=\hex@e@yy cm
1075
```

Some code we need for some options

```
1076 \newif\ifhex@label@is@name\hex@label@is@namefalse
1077 \def\hex@short@col{isfalse}
1078 \def\hex@got@short{isfalse}
1079 \pgfmathdeclarefunction{isfalse}{1}{%
1080   \begingroup
1081   \def\pgfmathresult{0}%
```

```

1082 \pgfmath@smuggleone\pgfmathresult
1083 \endgroup}
1084 \pgfmathdeclarefunction{istrue}{1}{%
1085 \begingroup
1086 \def\pgfmathresult{1}%
1087 \pgfmath@smuggleone\pgfmathresult
1088 \endgroup}

```

What follows is a way to configure the hex coordinate system. For example, if the rows goes down, then we can flag that, but still add hexes straightforwardly. Similar for columns. We can also specify that the first row or column has number 1 (instead of 0). Since this is dealt with a the coordinate level, it means most of the rest of the code is agnostic to these choices.

Which is the first coordinate (0 or 1)

```

1089 \tikzset{
1090 hex/first row is/.is choice,
1091 hex/first row is/0/.code={\def\hex@coords@row@off{0}},
1092 hex/first row is/1/.code={\def\hex@coords@row@off{-1}},
1093 hex/first row is=0,
1094 hex/first column is/.is choice,
1095 hex/first column is/0/.code={\def\hex@coords@col@off{0}},
1096 hex/first column is/1/.code={\def\hex@coords@col@off{-1}},
1097 hex/first column is=0,
1098 hex/first row and column are/.is choice,
1099 hex/first row and column are/0/.style={
1100   hex/first row is=0,%
1101   hex/first column is=0},
1102 hex/first row and column are/1/.style={
1103   hex/first row is=1,%
1104   hex/first column is=1},

```

Which way does the column and row numbers go

```

1105 hex/row direction is/.is choice,
1106 hex/row direction is/normal/.code={\def\hex@coords@row@fac{1}},
1107 hex/row direction is/reversed/.code={\def\hex@coords@row@fac{-1}},
1108 hex/row direction is/up/.style={hex/row direction is=normal},
1109 hex/row direction is/down/.style={hex/row direction is=reversed},
1110 hex/row direction is/positive/.style={hex/row direction is=normal},
1111 hex/row direction is/negative/.style={hex/row direction is=reversed},
1112 hex/row direction is=normal,
1113 hex/column direction is/.is choice,
1114 hex/column direction is/normal/.code={\def\hex@coords@col@fac{1}},
1115 hex/column direction is/reversed/.code={\def\hex@coords@col@fac{-1}},
1116 hex/column direction is/right/.style={hex/column direction is=normal},
1117 hex/column direction is/left/.style={hex/column direction is=reversed},
1118 hex/column direction is/positive/.style={hex/column direction is=normal},
1119 hex/column direction is/negative/.style={hex/column direction is=reversed},
1120 hex/column direction is=normal,

```

Make labels names of shapes of the hexes so we can use labels to place stuff

```

1121 hex/label is name/.is if=hex@label@is@name,

```

If we have uneven number of rows in some columns.

```
1122 hex/short bottom columns/.is choice,
1123 hex/short bottom columns/odd/.code={%
1124   \def\hex@bot@short@col{isodd}
1125   \def\hex@got@bot@short{istrue}
1126   \hex@dbg{4}{Short columns (odd): \meaning\hex@bot@short@col}},
1127 hex/short bottom columns/even/.code={
1128   \def\hex@bot@short@col{iseven}
1129   \def\hex@got@bot@short{istrue}
1130   \hex@dbg{4}{Short column (even): \meaning\hex@bot@short@col}},
1131 hex/short bottom columns/none/.code={
1132   \def\hex@bot@short@col{isfalse}
1133   \def\hex@got@bot@short{isfalse}
1134   \hex@dbg{4}{Short columns (none): \meaning\hex@bot@short@col}},
1135 hex/short bottom columns=none,
1136 hex/short columns/.forward to=hex/short bottom columns,
1137 hex/short top columns/.is choice,
1138 hex/short top columns/odd/.code={%
1139   \def\hex@top@short@col{isodd}
1140   \def\hex@got@top@short{istrue}
1141   \hex@dbg{4}{Short columns (odd): \meaning\hex@top@short@col}},
1142 hex/short top columns/even/.code={
1143   \def\hex@top@short@col{iseven}
1144   \def\hex@got@top@short{istrue}
1145   \hex@dbg{4}{Short column (even): \meaning\hex@top@short@col}},
1146 hex/short top columns/none/.code={
1147   \def\hex@top@short@col{isfalse}
1148   \def\hex@got@top@short{isfalse}
1149   \hex@dbg{4}{Short columns (none): \meaning\hex@top@short@col}},
1150 hex/short top columns=none,
1151 }
1152 \message{^^JInitial hex coordinate setup:
1153 Rows: factor=\hex@coords@row@fac, offset=\hex@coords@row@off
1154 Columns: factor=\hex@coords@col@fac, offset=\hex@coords@col@off}
```

```
hex/coords/column
hex/coords/row
hex/coords/vertex
hex/coords/edge
hex/coords/offset
```

We define the keys for hexagon coordinates. These are the `row`, `column`, possible `vertex` or `edge`. Vertices and edges are defined as multiple-choice. `offset` specifies the offset from the centre in the direction of a vertex or edge. By default, the offset is one, meaning all the way to the vertex or edge.

The key `inverse row` specifies that the rows are given from the top down, but coordinates should be calculated as if the row was negative. This (should) allow us to design boards where rows increase downward, while still keeping the interface and remaining code somewhat reasonable and agnostic.

Similarly, the key `column 1`, will allow us to start the columns with 1.

```
1155 \tikzset{
```

```

1156 /hex/coords/.cd,
1157 column/.store in=\hex@col,
1158 c/.store in=\hex@col,
1159 row/.store in=\hex@row,
1160 r/.store in=\hex@row,
1161 offset/.store in=\hex@off,
1162 o/.store in=\hex@off,
1163 vertex/.is choice,
1164 vertex/none/.code={\global\let\hex@vtx\@empty},
1165 vertex/east/.code={\def\hex@vtx{0}},
1166 vertex/north east/.code={\def\hex@vtx{60}},
1167 vertex/north west/.code={\def\hex@vtx{120}},
1168 vertex/west/.code={\def\hex@vtx{180}},
1169 vertex/south west/.code={\def\hex@vtx{240}},
1170 vertex/south east/.code={\def\hex@vtx{300}},
1171 vertex/E/.code={\def\hex@vtx{0}},
1172 vertex/NE/.code={\def\hex@vtx{60}},
1173 vertex/NW/.code={\def\hex@vtx{120}},
1174 vertex/W/.code={\def\hex@vtx{180}},
1175 vertex/SW/.code={\def\hex@vtx{240}},
1176 vertex/SE/.code={\def\hex@vtx{300}},
1177 vertex/.default=none,
1178 v/.forward to=/hex/coords/vertex=#1,
1179 edge/.is choice,
1180 edge/none/.code={\global\let\hex@edg\@empty},
1181 edge/north east/.code={\def\hex@edg{30}},
1182 edge/north/.code={\def\hex@edg{90}},
1183 edge/north west/.code={\def\hex@edg{150}},
1184 edge/south west/.code={\def\hex@edg{210}},
1185 edge/south/.code={\def\hex@edg{270}},
1186 edge/south east/.code={\def\hex@edg{330}},
1187 edge/NE/.code={\def\hex@edg{30}},
1188 edge/N/.code={\def\hex@edg{90}},
1189 edge/NW/.code={\def\hex@edg{150}},
1190 edge/SW/.code={\def\hex@edg{210}},
1191 edge/S/.code={\def\hex@edg{270}},
1192 edge/SE/.code={\def\hex@edg{330}},
1193 edge/.default=none,
1194 e/.forward to=/hex/coords/edge,
1195 }

```

\hex@coords@reset

This macro resets the hex coordinates to default values. That is row and column 0, no vertex or edge.

```

1196 \def\hex@coords@reset{%
1197   \tikzset{%
1198     /hex/coords/.cd,
1199     column=0,
1200     row=0,
1201     edge=none,
1202     vertex=none,
1203     offset=1}}

```

The following calculates the Cartesian coordinates from Hex coordinates

```
(cs:hex column= $\langle C \rangle$ ,row= $\langle R \rangle$ ,vertex= $\langle V \rangle$ ,edge= $\langle E \rangle$ )
```

Given the hexagon column C and row R with hexagon radius r , the centre of the hexagon is at

$$\begin{aligned} x &= 2C\frac{3}{4}r \\ y &= r(R - (C\%2) \sin 60^\circ) \end{aligned}$$

If $\langle V \rangle$ or $\langle E \rangle$ are given, then these are added to the centre point.

Note, C and R may be fractional numbers, which will specify a point inside a hex.

We set-up the translation to Cartesian coordinates. First thing is to reset keys in `/hex/coords`, and then parse out the keys given.

```
1204 \def\hex@coords@conv#1{%
1205   \hex@coords@reset%
1206   \tikzset{/hex/coords/.cd, #1}%
```

Then we calculate the x coordinate and set the dimension `\pgf@x`. We do this by

$$x = c_e \frac{3}{2} ,$$

where

$$c_e = f_c(c + o_c) ,$$

is the effective column (stored in `\hex@eff@col`) calculated from is the direction factor f_c (set by `hex/column direction is`) and the offset o_c (set by `hex/first column is`).

```
1207 \pgfmathparse{int(\hex@coords@col@fac*(\hex@col+\hex@coords@col@off))}%
1208 \xdef\hex@eff@col{\pgfmathresult}%
1209 \hex@dbg{2}{Effective column: \hex@coords@col@fac * (\hex@col +
1210   \hex@coords@col@off) -> \hex@eff@col}%
1211 \pgfmathparse{\hex@eff@col*1.5}%
1212 \xdef\hex@x{\pgfmathresult}%
```

And then for the y coordinate and set the dimension `\pgf@y`.

$$y = 2(r_e - c_e \bmod 2) \cos 60^\circ ,$$

where

$$r_e = 2f_r(r + o_r) - (c + o_c) \bmod 2 ,$$

is the effective row (stored as `\hex@eff@row`) calculated from the the direction factor f_r (set by `hex/row direction is`) and the offset o_r (set by `hex/first row is`).

```
1213 \pgfmathparse{int(\hex@coords@row@fac*(\hex@row+\hex@coords@row@off))}%
```

```

1214 \xdef\hex@eff@row{\pgfmathresult}%
1215 \hex@dbg{2}{Effective row: \hex@coords@row@fac * (\hex@row +
1216   \hex@coords@row@off) -> \hex@eff@row}%
1217 %\pgfmathparse{(2*\hex@eff@row-mod(round((\hex@col+\hex@coords@col@off)),2))*\hex@yy}%
1218 \pgfmathparse{(2*\hex@eff@row-mod(abs(round(\hex@col+\hex@coords@col@off)),2))*\hex@yy}%
1219 \xdef\hex@y{\pgfmathresult}%

```

If we have a vertex specification add that location to the current coordinates. If not, set the point.

```

1220 \ifx\hex@vtx\@empty\else%
1221   \pgfmathparse{\hex@x+\hex@off*cos(\hex@vtx)}\xdef\hex@x{\pgfmathresult}
1222   \pgfmathparse{\hex@y+\hex@off*sin(\hex@vtx)}\xdef\hex@y{\pgfmathresult}
1223 \fi%
1224 % \ifx\hex@vtx\@empty\pgfpointxy{\hex@x}{\hex@y}\else%
1225 % \pgfpointadd{\pgfpointxy{\hex@x}{\hex@y}}{%
1226 %   \pgfpointscale{\hex@off}{\pgfpointpolarxy{\hex@vtx}{1}}}\fi%

```

If we have an edge specification add that location to the current coordinates.

```

1227 \ifx\hex@edg\@empty\else%
1228   \pgfmathparse{\hex@x+\hex@off*\hex@yy*cos(\hex@edg)}%
1229   \xdef\hex@x{\pgfmathresult}%
1230   \pgfmathparse{\hex@y+\hex@off*\hex@yy*sin(\hex@edg)}%
1231   \xdef\hex@y{\pgfmathresult}%
1232 \fi%
1233 % \ifx\hex@edg\@empty\else%
1234 % \pgfpointadd{\pgfpointxy{\hex@x}{\hex@y}}{%
1235 %   \pgfpointscale{\hex@off}{\pgfpointpolarxy{\hex@edg}{\hex@yy}}}\fi

```

For debugging, we can print out stuff.

```

1236 \pgfpointxy{\hex@x}{\hex@y}
1237 \hex@dbg{2}{Hex coordinates: #1
1238   ^^J c='\hex@col'
1239   ^^J r='\hex@row'
1240   ^^J v='\hex@vtx'
1241   ^^J e='\hex@edg'
1242   ^^J o='\hex@off'
1243   ^^J x='\hex@x'
1244   ^^J y='\hex@y'}%
1245 \global\let\hex@x\hex@x%
1246 \global\let\hex@y\hex@y%
1247 \global\let\hex@row\hex@row%
1248 \global\let\hex@col\hex@col%
1249 }
1250 \tikzdeclarecoordinatesystem{hex}{%
1251   \hex@coords@conv{#1}}

```

5.4.4 Hexes

In this part, we make macros etc. for the hexes.

A hex shape. We make a node of this shape if we are to give a name to the hex added. We add a bunch of anchors to it so we may easily refer to it. This is also where we actual fill stuff into the hex, such as terrain and so on.

```

1252 \tikzset{%
1253   /hex/.cd,
1254   bev/.store in=\hex@bevel,          bev/.initial=,
1255   bevel fraction/.store in=\hex@bevel@frac,bevel fraction/.initial=10,
1256   bevel/.is choice,
1257   bevel/none/.style      = {/hex/bev=},
1258   bevel/north west/.style = {/hex/bev=1},
1259   bevel/north east/.style = {/hex/bev=2},
1260   bevel/south west/.style = {/hex/bev=3},
1261   bevel/south east/.style = {/hex/bev=4},
1262   bevel/NW/.style        = {/hex/bev=1},
1263   bevel/NE/.style        = {/hex/bev=2},
1264   bevel/SW/.style        = {/hex/bev=3},
1265   bevel/SE/.style        = {/hex/bev=4},
1266   bevel/.default         = {north west},
1267 }
1268 \def\hex@bevel@frac{10}
1269 \tikzset{
1270   hex/bevel highlight/.style={fill=white,opacity=.25},
1271   hex/bevel shadow/.style={fill=black,opacity=.25},
1272 }

1273 \newdimen\wg@tmpe
1274 \newdimen\wg@tmpf
1275 \newdimen\wg@tmpg
1276 \def\hex@bevel@path#1{%
1277   \scope[#1]
1278   \wg@tmpe=\wg@tmpa\multiply\wg@tmpe by \hex@bevel@frac
1279   \wg@tmpf=\wg@tmpb\multiply\wg@tmpf by \hex@bevel@frac
1280   \wg@tmpg=\wg@tmpc\multiply\wg@tmpg by \hex@bevel@frac
1281   \divide\wg@tmpe100
1282   \divide\wg@tmpf100
1283   \divide\wg@tmpg100
1284   % Start
1285   \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
1286   % Left
1287   \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpb}}%
1288   % Left-down
1289   \pgfpathlineto{\pgfqpoint{\wg@tmpc}{\wg@tmpd}}%
1290   % Right down
1291   \wg@tmpa=-\wg@tmpa%
1292   \wg@tmpb=-\wg@tmpb%
1293   \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
1294   % Up, in
1295   \advance\wg@tmpa\wg@tmpe%
1296   \advance\wg@tmpb\wg@tmpf%
1297   \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
1298   % Left-down, in
1299   \advance\wg@tmpc-\wg@tmpg
1300   \pgfpathlineto{\pgfqpoint{\wg@tmpc}{\wg@tmpd}}%
1301   % Left, down in
1302   \advance\wg@tmpb-\wg@tmpf\wg@tmpb-\wg@tmpb%
1303   \advance\wg@tmpb-\wg@tmpf
1304   \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%

```

```

1305 % Start, down in
1306 \advance\wg@tmpa-\wg@tmpe\wg@tmpa-\wg@tmpa%
1307 \advance\wg@tmpa-\wg@tmpe
1308 \pgfpathlineto{\pgfpoint{\wg@tmpa}{\wg@tmpb}}%
1309 % %
1310 \pgfclosepath%
1311 \pgfusepath{fill}
1312 \endscope}%

1313 \hex@dbg{5}{Base vertex: \hex@xx,\hex@yy}
1314 \hex@dbg{5}{Base edges: \hex@e@xx,\hex@e@yy}
1315 \pgfdeclareshape{hex/hex}{%
1316 \saveddimen\radius{\pgf@x=\hex@radius}
1317 \savedanchor{\east}{\pgfpoint{\hex@radius}{0cm}}
1318 \savedanchor{\west}{\pgfpoint{-\hex@radius}{0cm}}
1319 \savedanchor{\northeast}{\pgfpoint{\hex@dx}{\hex@dy}}
1320 \savedanchor{\northwest}{\pgfpoint{-\hex@dx}{\hex@dy}}
1321 \savedanchor{\southwest}{\pgfpoint{-\hex@dx}{-\hex@dy}}
1322 \savedanchor{\southeast}{\pgfpoint{\hex@dx}{-\hex@dy}}
1323 \savedanchor{\northedge}{\pgfpoint{0cm}{\hex@dy}}
1324 \savedanchor{\southedge}{\pgfpoint{0cm}{-\hex@dy}}
1325 \savedanchor{\northeastedge}{\pgfpoint{\hex@e@dx}{\hex@e@dy}}
1326 \savedanchor{\northwestedge}{\pgfpoint{-\hex@e@dx}{\hex@e@dy}}
1327 \savedanchor{\southwestedge}{\pgfpoint{-\hex@e@dx}{-\hex@e@dy}}
1328 \savedanchor{\southeastedge}{\pgfpoint{\hex@e@dx}{-\hex@e@dy}}
1329 \savedmacro\init{%
1330 \def\hexpath{%
1331 \pgfpathmoveto{\east}%
1332 \pgfpathlineto{\northeast}%
1333 \pgfpathlineto{\northwest}%
1334 \pgfpathlineto{\west}%
1335 \pgfpathlineto{\southwest}%
1336 \pgfpathlineto{\southeast}%
1337 \pgfpathclose}
1338 }

```

These are the actual user callable anchors. We make anchors for each vertex and mid points on each edge.

```

1339 %%
1340 \anchor{center}{\pgfpointorigin}
1341 \anchor{east}{\east}
1342 \anchor{west}{\west}
1343 \anchor{north east}{\northeast}
1344 \anchor{north west}{\northwest}
1345 \anchor{south west}{\southwest}
1346 \anchor{south east}{\southeast}
1347 \anchor{north edge}{\northedge}
1348 \anchor{south edge}{\southedge}
1349 \anchor{north east edge}{\northeastedge}
1350 \anchor{north west edge}{\northwestedge}
1351 \anchor{south west edge}{\southwestedge}
1352 \anchor{south east edge}{\southeastedge}

```

Next we make some short hand aliases for each of these anchors.

```

1353 \anchor{E}{\east}
1354 \anchor{W}{\west}
1355 \anchor{NE}{\northeast}
1356 \anchor{NW}{\northwest}
1357 \anchor{SW}{\southwest}
1358 \anchor{SE}{\southeast}
1359 \anchor{N edge}{\northeastedge}
1360 \anchor{S edge}{\southwestedge}
1361 \anchor{NE edge}{\northeastedge}
1362 \anchor{NW edge}{\northwestedge}
1363 \anchor{SW edge}{\southwestedge}
1364 \anchor{SE edge}{\southeastedge}

```

The next part is commented out because its not obvious we'll use these.

```

1365 %%
1366 \savedanchor{\chitnorth}{\pgfqpoint{0cm}{0.6cm}}
1367 \savedanchor{\chitsouth}{\pgfqpoint{0cm}{-0.6cm}}
1368 \savedanchor{\chiteast}{\pgfqpoint{0.6cm}{0cm}}
1369 \savedanchor{\chitwest}{\pgfqpoint{-0.6cm}{0cm}}
1370 \savedanchor{\chitnortheast}{\pgfqpoint{0.6cm}{0.6cm}}
1371 \savedanchor{\chitnorthwest}{\pgfqpoint{-0.6cm}{0.6cm}}
1372 \savedanchor{\chitsouthwest}{\pgfqpoint{-0.6cm}{-0.6cm}}
1373 \savedanchor{\chitsoutheast}{\pgfqpoint{0.6cm}{-0.6cm}}
1374 %
1375 \anchor{chit north}{\chitnorth}
1376 \anchor{chit south}{\chitsouth}
1377 \anchor{chit east}{\chiteast}
1378 \anchor{chit west}{\chitwest}
1379 \anchor{chit north east}{\chitnortheast}
1380 \anchor{chit north west}{\chitnorthwest}
1381 \anchor{chit south west}{\chitsouthwest}
1382 \anchor{chit south east}{\chitsoutheast}
1383 %
1384 \anchor{chit N}{\chitnorth}
1385 \anchor{chit S}{\chitsouth}
1386 \anchor{chit E}{\chiteast}
1387 \anchor{chit W}{\chitwest}
1388 \anchor{chit NE}{\chitnortheast}
1389 \anchor{chit NW}{\chitnorthwest}
1390 \anchor{chit SW}{\chitsouthwest}
1391 \anchor{chit SE}{\chitsoutheast}
1392 %

```

The background path. This path may be drawn when the node is drawn. However, we will do most of the work in the `\behindbackgroundpath` which gets drawn *after* this path.

```

1393 \backgroundpath{\init\hexpath}

```

The *behind* background path, where we do most of the work.

```

1394 \behindforegroundpath{%
1395   \hex@dbg{2}{Hex behind foreground path:
1396     ^^JTterrain: '\meaning\hex@terrain'}

```

```

1397     ^^JRidges:      '\meaning\hex@ridges'
1398     ^^JTown:        '\meaning\hex@town'
1399     ^^JExtra clipped: '\meaning\hex@extra@clip'
1400     ^^JLabel:       '\meaning\hex@label'
1401     ^^JExtra:       '\meaning\hex@extra'
1402     ^^JLast node name: '\meaning\tikzlastnode'
1403     ^^JHex row:     '\meaning\hex@row'
1404     ^^JHex col:     '\meaning\hex@col'
1405 }%
1406 \init%

```

We start a scope and clip to the hex path first.

```

1407 \scope%
1408   \hexpath%
1409   \pgfusepath{clip}%

```

Anything inside this scope is clipped to the hex path. The next step is to see if we have a specified terrain for the hex.

```

1410   \@ifundefined{hex@terrain}{\let\hex@terrain\empty}{}%
1411   \ifx\hex@terrain\empty\else\hex@do@terrain\fi%

```

This concludes the processing of the terrain of the hex. Next, we must see if the user specified ridges.

```

1412   \@ifundefined{hex@ridges}{\let\hex@ridges\empty}{}%
1413   \ifx\hex@ridges\empty\else\hex@do@ridges\fi%

```

This concludes the processing of the ridges of the hex. Next, we should process any extra (clipped) stuff specified. The user may pass options to each picture by preceding it with [*options*].

```

1414   \@ifundefined{hex@extra@clip}{\let\hex@extra@clip\empty}{}
1415   \ifx\hex@extra@clip\empty\else%
1416     \hex@dbg{5}{Extra clipped: '\meaning\hex@extra'}
1417     \pgfpointorigin\wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
1418     \wg@pic@all{\hex@extra@clip}{\the\wg@tmpa,\the\wg@tmpb}{}%
1419   \fi%

```

This concludes the extra stuff put in the hex. Next, we should place the label if specified. Note, we may know the hex row and column at this point, stored in `\hex@row` and `\hex@column`, respectively. We may want to name the generated node from these if the user specified that option (perhaps use `\pgfnoderename` or similar).

```

1420   \@ifundefined{hex@label}{\let\hex@label\empty}{}
1421   \ifx\hex@label\empty\else\hex@do@label\fi%

1422   \@ifundefined{hex@bevel}{\let\hex@bevel\empty}{}
1423   \ifx\hex@bevel\empty\else%
1424     \northeast
1425     \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
1426     \west
1427     \wg@tmpc=\pgf@x\wg@tmpd=\pgf@y%
1428     \ifcase\hex@bevel\relax
1429     \or%1
1430     \or\wg@tmpa=-\wg@tmpa\wg@tmpc=-\wg@tmpc%2
1431     \or\wg@tmpb=-\wg@tmpb\wg@tmpd=-\wg@tmpd%3
1432     \or% 4

```

```

1433     \wg@tmpa=-\wg@tmpa\wg@tmpc=-\wg@tmpc%
1434     \wg@tmpb=-\wg@tmpb\wg@tmpd=-\wg@tmpd%
1435     \fi
1436     \hex@bevel@path{chit/bevel highlight}
1437     \northeast
1438     \wg@tmpa=-\pgf@x\wg@tmpb=-\pgf@y%
1439     \west
1440     \wg@tmpc=-\pgf@x\wg@tmpd=-\pgf@y%
1441     \ifcase\hex@bevel\relax
1442     \or%1
1443     \or\wg@tmpa=-\wg@tmpa\wg@tmpc=-\wg@tmpc%2
1444     \or\wg@tmpb=-\wg@tmpb\wg@tmpd=-\wg@tmpd%3
1445     \or% 4
1446     \wg@tmpa=-\wg@tmpa\wg@tmpc=-\wg@tmpc%
1447     \wg@tmpb=-\wg@tmpb\wg@tmpd=-\wg@tmpd%
1448     \fi
1449     \hex@bevel@path{chit/bevel shadow}
1450 \fi

1451 \endscope%

```

This concludes the label processing, and stuff that should be clipped to the hex shape. If the user specified a town, we can now make that.

```

1452 \ifundefined{hex@town}{\let\hex@town\empty}{}
1453 \ifundefined{hex@c@pic}{\let\hex@c@pic\empty}{}
1454 \ifx\hex@town\empty\else\hex@do@town\fi%

```

We can now add extra (non-clipped) stuff. We assume that extra stuff is pictures. The user may pass options to each picture by preceding it with [*options*].

```

1455 \ifundefined{hex@extra}{\let\hex@extra\empty}{}
1456 \ifx\hex@extra\empty\else%
1457   \hex@dbg{5}{Extra: '\meaning\hex@extra'}
1458   \pgfpointright\wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
1459   \wg@pic@all{\hex@extra}{\the\wg@tmpa,\the\wg@tmpb}{}%
1460 \fi%
1461 }
1462 }

```

```

/hex/terrain
/hex/town
/hex/label
/hex/ridges
/hex/extra
/hex/extra clipped

```

Next, we set up the name space for hex keys. This is the top level name space for hexes. Sub keys `terrain`, `ridges`, `town`, `extra`, `label`, and `extra clipped`, store their arguments in macros and we expand these later on. This allows us to scope some of the keys given to those specific parts.

Define keys for hexagon options. These are

Name	Description
terrain	Terrain
label	Label on hex
town	Town in hex. Optionally with a name
ridges	Ridge markings on hex
extra	More
extra clipped	More clipped to hex

```

1463 \tikzset{%
1464   /hex/.search also={/tikz},%
1465   /hex/.cd,%
1466   terrain/.store in=\hex@terrain,%
1467   ridges/.store in=\hex@ridges,%
1468   town/.store in=\hex@town,%
1469   extra/.store in=\hex@extra,%
1470   label/.store in=\hex@label,%
1471   extra clipped/.store in=\hex@extra@clip%
1472 }

```

hex

The next key is the real work horse of the show. Specifying the `hex` key to a node effectively creates a hex for us. Now, there are some things we cannot do outright in the node shape code. For example, we cannot set the name of the node created from the shape code. Therefore, the use of `\hex` is often the right choice.

```

1473 \tikzset{%
1474   hex/hex/.style={
1475     transform shape,
1476     anchor=center,
1477     draw=pgfstrokecolor,
1478     fill=none,
1479     thick,
1480     solid},
1481   hex/.code={%
1482     \hex@dbg{1}{=== Hex with options: '#1'}%
1483     \pgfkeys{/tikz/transform shape,/tikz/shape=hex/hex}
1484     \pgfkeys{/hex/.cd,/tikz/hex/hex,/tikz/every hex/.try,#1}}

```

The first thing is to set the default graphics options. The key `every hex` can be set to hex options to be used for all hexes. For example, if one want to label all hexes with an auto-generated label, one can do

```
\tikzset{every hex/.style={label={auto=numbered}}}
```

This, coupled with the `hex/label is name` option allows us to set up the board with really minimal effort. We can then use the board coordinates when placing units, and other things.

Now we have set up these tools we can go on and define the user facing macro.

```

\hex
\hex@
\hex@@

```

This will add a hex to the output graphics. Note, the macro need not be followed by a semi-colon (;). First argument is optional options.

```
1485 \def\hex{%
1486   \@ifnextchar[{\hex@}{\hex@[]}%]
1487 }
```

Second optional argument is the coordinates. These should be given in the hex coordinate system.

```
1488 \def\hex@[#1]{%
1489   \@ifnextchar({\hex@@{#1}}{%
1490     \hex@@{#1}(c=0,r=0)}%)
1491 }
```

Third argument is the name to be used.

```
1492 \def\hex@@#1(#2){%
1493   \@ifnextchar({\hex@@@{#1}{#2}}{\hex@@@{#1}{#2}()})%
1494 }
```

Now for the real work-horse. First thing is to reset keys and parse them out from the arguments.

```
1495 %      Third argument is name
1496 \def\hex@@@#1#2(#3){%
1497   \node[hex={#1}] (tmp) at (hex cs:#2) {};%
1498   \hex@dbg{8}{=== Label text: '\meaning\hex@l@text'}
1499   \ifx|#3|\relax%
1500     \@ifundefined{hex@l@text}{%
1501       \hex@dbg{8}{=== Label text of hex (#2) not defined}%
1502       \let\hex@l@text\empty%
1503     }{}
1504     \ifhex@label@is@name%
1505       \hex@dbg{5}{=== Use label text of hex (#2) as name}%
1506       \ifx\hex@l@text\@empty%
1507         \hex@dbg{8}{=== Argh! Label text is empty! '\meaning\hex@l@text'}
1508       \else%
1509         \hex@dbg{3}{=== Renaming hex to label text '\hex@l@text'}
1510         \pgfnoderename{\hex@l@text}{tmp}%
1511       \fi%
1512     \fi%
1513   \else%
1514     \hex@dbg{3}{=== Renaming hex to user defined name '#3'}%
1515     \pgfnoderename{#3}{tmp}%
1516   \fi%
1517   \@ifnextchar;{\@gobble}{}%
1518 }
```

5.4.5 Terrain

With the above main routine for making hexes, we turn to decorating a hex with a terrain.

```
hex/terrain/image
hex/terrain/pic
hex/terrain/code
hex/terrain/clip
```

We make the namespace `/hex/terrain` to hold the specific terrain keys. Keys used by terrain identifiers are

Name	Description
image	Terrain tile image
pic	Terrain TikZ picture
code	Arbitrary TikZ code
clip	TikZ path to clip terrain

Now, we have the keys we'll need for selecting the terrain. These live in the namespace `/hex/terrain`, and we can select between pictures or images (external graphics files) for making the terrain. We define some short hands to easily select the common terrains.

```
1519 \newif\if@hex@t@rot\@hex@t@rotfalse%
1520 \tikzset{
1521 /hex/terrain/.search also={/tikz},%
1522 /hex/terrain/.cd,%
1523 pic/.store in=\hex@t@pic,%
1524 image/.store in=\hex@t@image,%
1525 code/.store in=\hex@t@code,%
1526 clip/.store in=\hex@t@clip,%
1527 random rotation/.is if=@hex@t@rot,
1528 rotate/.store in=\hex@t@s@angle,
1529 pic/.default=,
1530 image/.default=,
1531 code/.default=,
1532 clip/.default=,
1533 rotate/.default=,
1534 }
1535 \iffalse
1536 \tikzset{
1537 /hex/terrain/.cd,%
1538 beach/.style={pic=hex/terrain/beach},
1539 fields/.style={pic=hex/terrain/fields},
1540 speckle/.style={pic=hex/terrain/speckle},
1541 light woods/.style={pic=hex/terrain/light woods},
1542 woods/.style={pic=hex/terrain/woods},
1543 swamp/.style={pic=hex/terrain/swamp},
1544 rough/.style={pic=hex/terrain/rough},
1545 mountains/.style={pic=hex/terrain/mountains},
1546 village/.style={pic=hex/terrain/village},
1547 town/.style={pic=hex/terrain/town},
1548 city/.style={pic=hex/terrain/city},
1549 }
1550 \else
1551 \tikzset{
1552 /hex/terrain/.cd,%
1553 beach/.style={image=wargame.beach},
1554 fields/.style={image=wargame.fields},
1555 speckle/.style={image=wargame.speckle},
```

```

1556 light woods/.style={image=wargame.light_woods},
1557 woods/.style={image=wargame.woods},
1558 swamp/.style={image=wargame.swamp},
1559 rough/.style={image=wargame.rough},
1560 mountains/.style={image=wargame.mountains},
1561 village/.style={image=wargame.village},
1562 town/.style={image=wargame.town},
1563 city/.style={image=wargame.city},
1564 }
1565 \fi

```

Before we go on, we define the macro that actually generates the terrain of a hex.

`\hex@do@terrain`

If we do have a terrain specified, we start a new scope, this time to clip the terrain by the clipping path specified by `hex={terrain={clip=...}}`. The first thing into the new scope is to process the keys specified in `hex={terrain=...}`. This will set the terrain and the clipping of the terrain.

```

1566 \def\hex@do@terrain{%
1567   \hex@dbg{5}{Terrain: \meaning\hex@terrain}%
1568   \edef\hex@t@tmp{[/hex/terrain/.cd,\hex@terrain]}%
1569   \expandafter\scope\hex@t@tmp% Scope for terrain clipping.
1570   \hex@dbg{5}{Terrain:
1571     ^^J pic: \meaning\hex@t@pic
1572     ^^J image: \meaning\hex@t@image
1573     ^^J code: \meaning\hex@t@code
1574     ^^J clip: \meaning\hex@t@clip}

```

We check to see if we have any clipping pictures. If so, we process these in turn and append the soft path to a macro. Once this is done, we use the soft path as a clipping path for the rest of the (terrain) scope.

```

1575   \ifundefined{hex@t@clip}{\let\hex@t@clip\empty}{}
1576   \ifx\hex@t@clip\empty\else%
1577     \edef\hex@t@cc{\hex@t@clip}%
1578     \def\hex@t@c{}
1579     \foreach \c in \hex@t@cc{%
1580       \hex@dbg{5}{Clipping to ‘\c’}
1581       \expandafter\wg@pic\c@endwg@pic {}{\wg@tmpa,\wg@tmpb}{%
1582         save path=\hex@t@tmp}%
1583       \wg@addto@macro\hex@t@c\hex@t@tmp % Append to clipping
1584     }%
1585     \pgfsyssoftpath@setcurrentpath{\hex@t@c}% Set path
1586     \clip;% Clip to the path
1587   \fi % End of clipping terrain

```

We’re now ready to make the terrain. First, we check to see if the relevant storage macros are undefined and if so, `\let` them to `\empty` so that we can deal more easily with the various cases.

```

1588   %% Now switch between how to draw the terrain. If some of the
1589   %% macros are undefined, define them to be empty
1590   \ifundefined{hex@t@pic}{\let\hex@t@pic\empty}{}
1591   \ifundefined{hex@t@image}{\let\hex@t@image\empty}{}

```

```

1592 \ifundefined{hex@t@code}{\let\hex@t@code\empty}{}
1593 \ifundefined{hex@t@code}{\let\hex@t@code\empty}{}

```

Possible make rotation. We define a scope and rotate within that.

```

1594 \def\hex@t@angle{0}%
1595 \if@hex@t@rot%
1596 \pgfmathrandominteger{\hex@t@angle}{0}{5}
1597 \pgfmathparse{int(60*\hex@t@angle)}\edef\hex@t@angle{\pgfmathresult}%
1598 \else%
1599 \@ifundefined{hex@t@s@angle}{}{
1600 \ifx\hex@t@s@angle\@empty%
1601 \else%
1602 \edef\hex@t@angle{\hex@t@s@angle}%
1603 \fi}%
1604 \fi%
1605 \hex@dbg{5}{Will rotate terrain by '\hex@t@angle'}%

```

If we have specified code for the terrain, then execute that.

```

1606 \scope[rotate=\hex@t@angle]%
1607 \ifx\hex@t@code\empty\else\hex@t@code\fi%
1608 \endscope% End rotate code

```

First we check if we have not got terrain images, but terrain pictures. If we have that, we process these in turn. Note, the user can give options to each terrain picture by preceding the picture name with [*options*].

```

1609 % If we have no image, check if we have pictures.
1610 \ifx\hex@t@image\empty%
1611 \hex@dbg{8}{No terrain images}%
1612 \ifx\hex@t@pic\empty\else%
1613 % We have pictures
1614 \hex@dbg{5}{Terrain pictures}%
1615 \pgfpointorigin\wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
1616 \foreach \i in \hex@t@pic{%
1617 \wg@pic@all{\i}{\the\wg@tmpa,\the\wg@tmpb}{%
1618 rotate=\hex@t@angle,
1619 transform shape}}%
1620 \fi% We have pictures.

```

If the user specified images rather than pictures, then we process these in turn. Again, the user can specify options to each terrain image by preceding the image file name with [*options*].

```

1621 \else % We have images
1622 \hex@dbg{5}{Terrain images}%
1623 \pgfpointorigin\wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
1624 \foreach \i in \hex@t@image{%
1625 \hex@dbg{10}{Terrain image: '\meaning\i'}
1626 \expandafter\wg@node{%
1627 \includegraphics[width=2cm]{\i}\endwg@node %
1628 }{\wg@tmpa,\wg@tmpb}{%
1629 rotate=\hex@t@angle,%
1630 shape=rectangle,%
1631 anchor=center,%
1632 transform shape,%

```

```

1633         draw=none}%
1634     }
1635     \fi%
1636 \endscope% End of terrain scope
1637 }% End of terrain

```

Next, we define some example clippings of the terrain images. Specifically, we make clippings to sextants. We do this by first defining a macro.

\hex@make@sextants

When executed this macro will generate some paths that will clip to sextants. The first argument is the inner radius of the sextant and the second argument is the (possible empty) prefix to put in front of the sextant name.

```

1638 \def\hex@x@r{.7}
1639 \def\hex@make@sextants#1#2{%
1640     \tikzset{%
1641         pics/hex/#2sextant/.is choice,
1642         pics/hex/#2sextant/north east/.style={
1643             code={
1644                 \path[pic actions]( 0:1)--( 60:1)--( 60:#1)--( 0:#1)--cycle;}},
1645         pics/hex/#2sextant/north/.style={
1646             code={
1647                 \path[pic actions]( 60:1)--(120:1)--(120:#1)--( 60:#1)--cycle;}},
1648         pics/hex/#2sextant/north west/.style={
1649             code={
1650                 \path[pic actions](120:1)--(180:1)--(180:#1)--(120:#1)--cycle;}},
1651         pics/hex/#2sextant/south west/.style={
1652             code={
1653                 \path[pic actions](180:1)--(240:1)--(240:#1)--(180:#1)--cycle;}},
1654         pics/hex/#2sextant/south/.style={
1655             code={
1656                 \path[pic actions](240:1)--(300:1)--(300:#1)--(240:#1)--cycle;}},
1657         pics/hex/#2sextant/south east/.style={
1658             code={
1659                 \path[pic actions](300:1)--(360:1)--(360:#1)--(300:#1)--cycle;}},
1660         pics/hex/#2sextant/center/.style={
1661             code={
1662                 \path[pic actions]
1663                 (0:#1)--
1664                 (60:#1)--
1665                 (120:#1)--
1666                 (180:#1)--
1667                 (240:#1)--
1668                 (300:#1)--cycle;}},
1669         pics/hex/#2sextant/NE/.style=hex/#2sextant/north east,
1670         pics/hex/#2sextant/NE/.style=hex/#2sextant/north east,
1671         pics/hex/#2sextant/N/.style=hex/#2sextant/north,
1672         pics/hex/#2sextant/NW/.style=hex/#2sextant/north west,
1673         pics/hex/#2sextant/SW/.style=hex/#2sextant/south west,
1674         pics/hex/#2sextant/S/.style=hex/#2sextant/south,
1675         pics/hex/#2sextant/SE/.style=hex/#2sextant/south east,
1676         pics/hex/#2sextant/C/.style=hex/#2sextant/center,

```

```

1677 }%
1678 }

1679 \hex@make@sextants{.7}{ }
1680 \hex@make@sextants{.3}{large }
1681 \hex@make@sextants{0}{full }

```

Next, we define some styles for styling the terrain pictures. Users can change these styles (e.g., by appending to them) to change say the colour of the terrain graphics.

hex/terrain/beach

The style for beach hexes. The pattern is filled with a yellowish colour, and drawing of the outline is disabled.

```

1682 \tikzset{
1683   hex/terrain/beach/.style={%
1684     fill={rgb,100:red,93;green,73;blue,35},%
1685     draw=none%
1686   }%
1687 }

```

hex/terrain/beach

Now for the actual patterns. We go in the same order as above — i.e, we start with the beach pattern. This is rather long.



```

1688 \ifhex@terrain@pic
1689 \tikzset{
1690   hex/terrain/beach/.pic={
1691     \path[hex/terrain/beach,pic actions,draw=none]
1692       (-0.4931, 0.8848)
1693       -- (-0.4998, 0.8734)
1694       .. controls (-0.4908, 0.8731) and (-0.4813, 0.8762) .. (-0.4762, 0.8847)
1695       --cycle
1696       (-0.4032, 0.8841)
1697       .. controls (-0.4004, 0.8804) and (-0.3988, 0.8794) .. (-0.3956, 0.8745)
1698       .. controls (-0.3760, 0.8443) and (-0.3811, 0.8330) .. (-0.3456, 0.8112)
1699       .. controls (-0.3250, 0.7986) and (-0.2712, 0.7770) .. (-0.2531, 0.8032)
1700       .. controls (-0.2294, 0.8375) and (-0.2984, 0.8503) .. (-0.3193, 0.8690)
1701       .. controls (-0.3243, 0.8735) and (-0.3281, 0.8785) .. (-0.3321, 0.8835)
1702       --cycle
1703       (-0.2462, 0.8828)
1704       .. controls (-0.2425, 0.8681) and (-0.2383, 0.8546) .. (-0.2293, 0.8461)
1705       .. controls (-0.2102, 0.8280) and (-0.1892, 0.8390) .. (-0.1859, 0.8669)
1706       .. controls (-0.1854, 0.8711) and (-0.1871, 0.8772) .. (-0.1875, 0.8822)
1707       --cycle

```

```

1708 (-0.0997, 0.8815)
1709 .. controls (-0.0971, 0.8706) and (-0.0941, 0.8597) .. (-0.0907, 0.8493)
1710 -- (-0.0570, 0.8578)
1711 .. controls (-0.0570, 0.8629) and (-0.0560, 0.8730) .. (-0.0553, 0.8812)
1712 --cycle
1713 ( 0.0213, 0.8805)
1714 .. controls ( 0.0222, 0.8725) and ( 0.0235, 0.8650) .. ( 0.0262, 0.8587)
1715 .. controls ( 0.0391, 0.8281) and ( 0.0706, 0.8199) .. ( 0.0917, 0.7894)
1716 .. controls ( 0.1112, 0.7609) and ( 0.1058, 0.7286) .. ( 0.1050, 0.6961)
1717 -- ( 0.1731, 0.7216)
1718 -- ( 0.1203, 0.8649)
1719 -- ( 0.1097, 0.8797)
1720 --cycle
1721 ( 0.2978, 0.8781)
1722 .. controls ( 0.2985, 0.8773) and ( 0.3002, 0.8756) .. ( 0.3008, 0.8749)
1723 .. controls ( 0.2854, 0.8687) and ( 0.2549, 0.8572) .. ( 0.2421, 0.8487)
1724 .. controls ( 0.2026, 0.8224) and ( 0.1905, 0.7567) .. ( 0.2046, 0.7132)
1725 .. controls ( 0.2146, 0.6819) and ( 0.2330, 0.6680) .. ( 0.2394, 0.6280)
1726 .. controls ( 0.2413, 0.6160) and ( 0.2468, 0.5527) .. ( 0.2446, 0.5437)
1727 .. controls ( 0.2396, 0.5232) and ( 0.2211, 0.5122) .. ( 0.2231, 0.4913)
1728 .. controls ( 0.2261, 0.4603) and ( 0.2686, 0.4388) .. ( 0.2891, 0.4194)
1729 .. controls ( 0.3020, 0.4071) and ( 0.3136, 0.3895) .. ( 0.3281, 0.3799)
1730 .. controls ( 0.3688, 0.3533) and ( 0.3905, 0.3863) .. ( 0.4199, 0.3902)
1731 .. controls ( 0.4350, 0.3921) and ( 0.4560, 0.3849) .. ( 0.4710, 0.3812)
1732 -- ( 0.4795, 0.4067)
1733 -- ( 0.4965, 0.4067)
1734 .. controls ( 0.5008, 0.3961) and ( 0.5009, 0.3893) .. ( 0.5112, 0.3811)
1735 .. controls ( 0.5112, 0.3811) and ( 0.6172, 0.3385) .. ( 0.6481, 0.3037)
1736 .. controls ( 0.6729, 0.2758) and ( 0.6641, 0.2532) .. ( 0.6667, 0.2206)
1737 -- ( 0.7004, 0.2206)
1738 .. controls ( 0.7839, 0.2118) and ( 0.7047, 0.0740) .. ( 0.7057, 0.0568)
1739 .. controls ( 0.7067, 0.0396) and ( 0.7865,-0.0424) .. ( 0.8032,-0.0520)
1740 .. controls ( 0.8251,-0.0644) and ( 0.8703,-0.0686) .. ( 0.8572,-0.0293)
1741 .. controls ( 0.8518,-0.0131) and ( 0.7996, 0.0474) .. ( 0.7843, 0.0564)
1742 .. controls ( 0.7724, 0.0633) and ( 0.7645, 0.0636) .. ( 0.7518, 0.0664)
1743 .. controls ( 0.7688, 0.1093) and ( 0.7993, 0.1905) .. ( 0.7930, 0.2362)
1744 .. controls ( 0.7869, 0.2804) and ( 0.7252, 0.2982) .. ( 0.6946, 0.3268)
1745 .. controls ( 0.6664, 0.3531) and ( 0.6746, 0.3662) .. ( 0.6323, 0.3966)
1746 .. controls ( 0.5760, 0.4371) and ( 0.5386, 0.4324) .. ( 0.5250, 0.4601)
1747 .. controls ( 0.5090, 0.4927) and ( 0.5578, 0.6035) .. ( 0.5969, 0.5911)
1748 .. controls ( 0.6199, 0.5839) and ( 0.6224, 0.5471) .. ( 0.6341, 0.5291)
1749 .. controls ( 0.6488, 0.5064) and ( 0.7020, 0.4614) .. ( 0.7263, 0.4493)
1750 -- ( 0.7373, 0.4768)
1751 -- ( 0.6866, 0.5671)
1752 -- ( 0.6756, 0.5720)
1753 -- ( 0.6766, 0.5850)
1754 -- ( 0.6331, 0.6627)
1755 .. controls ( 0.6280, 0.6613) and ( 0.6239, 0.6599) .. ( 0.6157, 0.6589)
1756 -- ( 0.5646, 0.6589)
1757 .. controls ( 0.5375, 0.6557) and ( 0.5277, 0.6432) .. ( 0.4965, 0.6489)
1758 .. controls ( 0.4716, 0.6520) and ( 0.4306, 0.6774) .. ( 0.4104, 0.6489)
1759 .. controls ( 0.3809, 0.6093) and ( 0.4627, 0.6240) .. ( 0.4837, 0.5772)
1760 .. controls ( 0.4958, 0.5502) and ( 0.4652, 0.4811) .. ( 0.4429, 0.4648)

```

```

1761 -- ( 0.3523, 0.4350)
1762 .. controls ( 0.3178, 0.4372) and ( 0.3207, 0.4766) .. ( 0.3153, 0.5004)
1763 .. controls ( 0.3090, 0.5282) and ( 0.2968, 0.5398) .. ( 0.2922, 0.5684)
1764 .. controls ( 0.2896, 0.6035) and ( 0.3061, 0.6276) .. ( 0.2922, 0.6621)
1765 .. controls ( 0.2756, 0.6961) and ( 0.2422, 0.7190) .. ( 0.2525, 0.7640)
1766 .. controls ( 0.2650, 0.8188) and ( 0.3165, 0.7932) .. ( 0.3324, 0.8417)
1767 .. controls ( 0.3359, 0.8522) and ( 0.3385, 0.8648) .. ( 0.3399, 0.8778)
1768 --cycle
1769 ( 0.4261, 0.8770)
1770 -- ( 0.4333, 0.8493)
1771 -- ( 0.4845, 0.7440)
1772 .. controls ( 0.4963, 0.7304) and ( 0.5450, 0.6930) .. ( 0.5630, 0.6989)
1773 .. controls ( 0.5735, 0.7024) and ( 0.5838, 0.7169) .. ( 0.5932, 0.7337)
1774 -- ( 0.5612, 0.7909)
1775 .. controls ( 0.5537, 0.7875) and ( 0.5468, 0.7852) .. ( 0.5403, 0.7864)
1776 .. controls ( 0.5078, 0.7926) and ( 0.5191, 0.8406) .. ( 0.5145, 0.8567)
1777 .. controls ( 0.5121, 0.8651) and ( 0.5076, 0.8710) .. ( 0.5025, 0.8764)
1778 --cycle
1779 ( 0.3773, 0.8153)
1780 .. controls ( 0.3625, 0.7892) and ( 0.2993, 0.7161) .. ( 0.3316, 0.6877)
1781 .. controls ( 0.3432, 0.6774) and ( 0.3866, 0.6728) .. ( 0.4029, 0.6706)
1782 -- ( 0.3973, 0.7472)
1783 -- ( 0.4029, 0.8153)
1784 --cycle
1785 (-0.4224, 0.8088)
1786 .. controls (-0.4416, 0.8077) and (-0.4585, 0.7826) .. (-0.4275, 0.7562)
1787 -- (-0.3971, 0.7387)
1788 .. controls (-0.4780, 0.6942) and (-0.4752, 0.6640) .. (-0.4591, 0.5855)
1789 .. controls (-0.4391, 0.4887) and (-0.4527, 0.5347) .. (-0.4103, 0.4493)
1790 .. controls (-0.3870, 0.4026) and (-0.4070, 0.3747) .. (-0.3460, 0.3642)
1791 -- (-0.3352, 0.4823)
1792 .. controls (-0.3409, 0.5024) and (-0.3617, 0.5113) .. (-0.3739, 0.5281)
1793 -- (-0.4164, 0.6287)
1794 .. controls (-0.4188, 0.6375) and (-0.4186, 0.6444) .. (-0.4164, 0.6528)
1795 .. controls (-0.4067, 0.6807) and (-0.3521, 0.7255) .. (-0.3274, 0.6931)
1796 .. controls (-0.3070, 0.6694) and (-0.3336, 0.6432) .. (-0.3274, 0.6221)
1797 .. controls (-0.3249, 0.6055) and (-0.3059, 0.6028) .. (-0.2950, 0.6162)
1798 .. controls (-0.2867, 0.6265) and (-0.2838, 0.6558) .. (-0.2829, 0.6692)
1799 .. controls (-0.2775, 0.7444) and (-0.3333, 0.7652) .. (-0.3955, 0.7472)
1800 .. controls (-0.3950, 0.7586) and (-0.3916, 0.7684) .. (-0.3955, 0.7803)
1801 .. controls (-0.3986, 0.8016) and (-0.4109, 0.8096) .. (-0.4224, 0.8088)
1802 --cycle
1803 (-0.1391, 0.8077)
1804 .. controls (-0.1634, 0.8024) and (-0.1582, 0.7647) .. (-0.1487, 0.7492)
1805 .. controls (-0.1306, 0.7190) and (-0.1004, 0.7270) .. (-0.0652, 0.7073)
1806 -- (-0.0226, 0.6801)
1807 -- ( 0.0282, 0.6560)
1808 .. controls ( 0.0622, 0.6331) and ( 0.0955, 0.5639) .. ( 0.1219, 0.5259)
1809 .. controls ( 0.2125, 0.5714) and ( 0.1427, 0.6114) .. ( 0.1219, 0.6453)
1810 -- ( 0.1054, 0.6768)
1811 .. controls ( 0.0862, 0.7028) and ( 0.0448, 0.7080) .. ( 0.0115, 0.7299)
1812 .. controls (-0.0377, 0.7622) and (-0.0173, 0.7726) .. (-0.0822, 0.7918)
1813 .. controls (-0.0961, 0.7958) and (-0.1270, 0.8103) .. (-0.1391, 0.8077)

```

```

1814 --cycle
1815 (-0.5460, 0.7940)
1816 -- (-0.5911, 0.7166)
1817 .. controls (-0.5649, 0.7015) and (-0.5397, 0.7188) .. (-0.5308, 0.7556)
1818 .. controls (-0.5251, 0.7788) and (-0.5335, 0.7873) .. (-0.5460, 0.7940)
1819 --cycle
1820 (-0.2382, 0.7423)
1821 .. controls (-0.2453, 0.7424) and (-0.2512, 0.7383) .. (-0.2550, 0.7274)
1822 .. controls (-0.2635, 0.7026) and (-0.2353, 0.6726) .. (-0.2229, 0.6536)
1823 .. controls (-0.2031, 0.6234) and (-0.2020, 0.6105) .. (-0.1928, 0.5770)
1824 .. controls (-0.1763, 0.5803) and (-0.1499, 0.5890) .. (-0.1342, 0.5831)
1825 .. controls (-0.1112, 0.5745) and (-0.1047, 0.5481) .. (-0.0866, 0.5338)
1826 -- (-0.0397, 0.5102)
1827 -- ( 0.0664, 0.4219)
1828 .. controls ( 0.0874, 0.3954) and ( 0.0785, 0.3655) .. ( 0.1070, 0.3502)
1829 .. controls ( 0.1367, 0.3343) and ( 0.1690, 0.3592) .. ( 0.1732, 0.3899)
1830 .. controls ( 0.1755, 0.4075) and ( 0.1545, 0.4554) .. ( 0.1475, 0.4748)
1831 .. controls ( 0.0838, 0.4666) and ( 0.0509, 0.4836) .. ( 0.0454, 0.5515)
1832 .. controls (-0.0576, 0.5778) and (-0.0955, 0.6323) .. (-0.1754, 0.6949)
1833 .. controls (-0.1861, 0.7034) and (-0.2171, 0.7418) .. (-0.2382, 0.7423)
1834 --cycle
1835 (-0.5068, 0.6706)
1836 .. controls (-0.5119, 0.6724) and (-0.5194, 0.6726) .. (-0.5299, 0.6701)
1837 .. controls (-0.5512, 0.6413) and (-0.5242, 0.6333) .. (-0.5102, 0.6400)
1838 .. controls (-0.4981, 0.6457) and (-0.4916, 0.6653) .. (-0.5068, 0.6706)
1839 --cycle
1840 (-0.6356, 0.6402)
1841 -- (-0.6681, 0.5845)
1842 -- (-0.6588, 0.5684)
1843 .. controls (-0.6473, 0.5521) and (-0.6323, 0.5371) .. (-0.6265, 0.5174)
1844 .. controls (-0.6174, 0.4865) and (-0.6614, 0.4161) .. (-0.6950, 0.4206)
1845 .. controls (-0.7111, 0.4226) and (-0.7174, 0.4376) .. (-0.7460, 0.4507)
1846 -- (-0.7632, 0.4212)
1847 .. controls (-0.7629, 0.4042) and (-0.7611, 0.3875) .. (-0.7546, 0.3789)
1848 .. controls (-0.7424, 0.3626) and (-0.7129, 0.3612) .. (-0.6966, 0.3297)
1849 .. controls (-0.6823, 0.3022) and (-0.6963, 0.2741) .. (-0.6808, 0.2598)
1850 .. controls (-0.6602, 0.2410) and (-0.6495, 0.2720) .. (-0.6484, 0.2878)
1851 .. controls (-0.6461, 0.3229) and (-0.6488, 0.4046) .. (-0.6080, 0.4204)
1852 .. controls (-0.5750, 0.4330) and (-0.4980, 0.3514) .. (-0.4929, 0.3217)
1853 .. controls (-0.4895, 0.3019) and (-0.5044, 0.2671) .. (-0.4860, 0.2550)
1854 .. controls (-0.4691, 0.2439) and (-0.4582, 0.2679) .. (-0.4535, 0.2796)
1855 .. controls (-0.4450, 0.3015) and (-0.4273, 0.3562) .. (-0.4401, 0.3771)
1856 .. controls (-0.4495, 0.3922) and (-0.5019, 0.4172) .. (-0.5296, 0.4507)
1857 .. controls (-0.5656, 0.4941) and (-0.5734, 0.5631) .. (-0.5973, 0.6021)
1858 .. controls (-0.6099, 0.6226) and (-0.6226, 0.6316) .. (-0.6356, 0.6402)
1859 --cycle
1860 ( 0.2242, 0.6110)
1861 -- ( 0.1816, 0.6025)
1862 -- ( 0.1816, 0.5855)
1863 .. controls ( 0.2117, 0.5815) and ( 0.2140, 0.5821) .. ( 0.2242, 0.6110)
1864 --cycle
1865 ( 0.3924, 0.6049)
1866 .. controls ( 0.3895, 0.6048) and ( 0.3860, 0.6036) .. ( 0.3820, 0.6011)

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1867 .. controls ( 0.3535, 0.5835) and ( 0.3670, 0.5238) .. ( 0.3773, 0.5004)
1868 -- ( 0.3944, 0.5004)
1869 -- ( 0.4061, 0.5429)
1870 .. controls ( 0.4082, 0.5540) and ( 0.4130, 0.6056) .. ( 0.3924, 0.6049)
1871 --cycle
1872 (-0.2864, 0.5940)
1873 .. controls (-0.2904, 0.5793) and (-0.2950, 0.5676) .. (-0.2919, 0.5518)
1874 .. controls (-0.2769, 0.4768) and (-0.1616, 0.5041) .. (-0.2162, 0.5623)
1875 .. controls (-0.2236, 0.5702) and (-0.2346, 0.5747) .. (-0.2443, 0.5790)
1876 --cycle
1877 (-0.7010, 0.5280)
1878 -- (-0.7269, 0.4835)
1879 .. controls (-0.7207, 0.4876) and (-0.7144, 0.4952) .. (-0.7081, 0.5094)
1880 --cycle
1881 (-0.0992, 0.4748)
1882 -- (-0.2099, 0.4556)
1883 -- (-0.2888, 0.3790)
1884 -- (-0.3460, 0.3557)
1885 -- (-0.3389, 0.3218)
1886 .. controls (-0.3310, 0.2959) and (-0.3026, 0.2636) .. (-0.2781, 0.2927)
1887 .. controls (-0.2745, 0.2971) and (-0.2504, 0.3947) .. (-0.1948, 0.3764)
1888 .. controls (-0.1607, 0.3651) and (-0.1697, 0.2984) .. (-0.1588, 0.2536)
1889 -- (-0.1503, 0.2536)
1890 -- (-0.1503, 0.2450)
1891 -- (-0.1163, 0.2366)
1892 .. controls (-0.0968, 0.3059) and (-0.1262, 0.3371) .. (-0.1239, 0.3982)
1893 .. controls (-0.1229, 0.4261) and (-0.1067, 0.4484) .. (-0.0992, 0.4748)
1894 --cycle
1895 (-0.1503, 0.2450)
1896 -- (-0.1588, 0.2536)
1897 .. controls (-0.2292, 0.2544) and (-0.2730, 0.2893) .. (-0.2677, 0.2195)
1898 -- (-0.2609, 0.1855)
1899 .. controls (-0.2393, 0.1890) and (-0.2005, 0.2039) .. (-0.1909, 0.1753)
1900 .. controls (-0.1709, 0.1163) and (-0.2582, 0.0953) .. (-0.2387, 0.0533)
1901 .. controls (-0.2275, 0.0292) and (-0.1430, 0.0537) .. (-0.1361, 0.0692)
1902 .. controls (-0.1250, 0.0859) and (-0.1359, 0.1083) .. (-0.1361, 0.1259)
1903 .. controls (-0.1437, 0.1788) and (-0.1186, 0.1766) .. (-0.1503, 0.2450)
1904 --cycle
1905 ( 0.7348, 0.4408)
1906 .. controls ( 0.7113, 0.3774) and ( 0.7569, 0.3513) .. ( 0.7901, 0.3824)
1907 -- ( 0.7585, 0.4390)
1908 --cycle
1909 ( 0.2071, 0.4153)
1910 .. controls ( 0.1984, 0.3706) and ( 0.2118, 0.3204) .. ( 0.2582, 0.3046)
1911 .. controls ( 0.2685, 0.3631) and ( 0.2706, 0.3931) .. ( 0.2071, 0.4153)
1912 --cycle
1913 (-0.0567, 0.3982)
1914 .. controls (-0.0558, 0.3230) and (-0.0460, 0.3456) .. (-0.0210, 0.2876)
1915 -- ( 0.0067, 0.1940)
1916 .. controls ( 0.0180, 0.1513) and ( 0.0026, 0.1332) .. ( 0.0454, 0.1089)
1917 -- ( 0.0767, 0.1940)
1918 -- ( 0.0546, 0.2621)
1919 -- ( 0.0406, 0.3185)

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1920 -- (-0.0258, 0.3896)
1921 --cycle
1922 (-0.7969, 0.3634)
1923 -- (-0.8570, 0.2602)
1924 .. controls (-0.8515, 0.2550) and (-0.8469, 0.2514) .. (-0.8414, 0.2450)
1925 .. controls (-0.8020, 0.1990) and (-0.8201, 0.1971) .. (-0.7629, 0.1540)
1926 .. controls (-0.7462, 0.1414) and (-0.7054, 0.1023) .. (-0.6834, 0.1181)
1927 .. controls (-0.6662, 0.1304) and (-0.6813, 0.1625) .. (-0.6882, 0.1768)
1928 .. controls (-0.7213, 0.2456) and (-0.7865, 0.2417) .. (-0.8004, 0.2965)
1929 .. controls (-0.8052, 0.3154) and (-0.7990, 0.3413) .. (-0.7969, 0.3634)
1930 --cycle
1931 ( 0.8244, 0.3214)
1932 .. controls ( 0.8136, 0.3128) and ( 0.8080, 0.2984) .. ( 0.8114, 0.2706)
1933 .. controls ( 0.8314, 0.2739) and ( 0.8424, 0.2735) .. ( 0.8526, 0.2710)
1934 --cycle
1935 ( 0.5015, 0.3207)
1936 .. controls ( 0.4943, 0.3196) and ( 0.4861, 0.3171) .. ( 0.4766, 0.3130)
1937 .. controls ( 0.4611, 0.2827) and ( 0.4839, 0.2747) .. ( 0.5028, 0.2521)
1938 -- ( 0.5376, 0.1972)
1939 .. controls ( 0.5529, 0.1772) and ( 0.5728, 0.1698) .. ( 0.5845, 0.1426)
1940 .. controls ( 0.5979, 0.1115) and ( 0.5837, 0.0732) .. ( 0.5987, 0.0532)
1941 .. controls ( 0.6095, 0.0384) and ( 0.6236, 0.0428) .. ( 0.6350, 0.0532)
1942 .. controls ( 0.6681, 0.0842) and ( 0.6456, 0.1087) .. ( 0.6482, 0.1429)
1943 .. controls ( 0.6481, 0.1614) and ( 0.6596, 0.1802) .. ( 0.6482, 0.1967)
1944 .. controls ( 0.6390, 0.2131) and ( 0.5992, 0.2239) .. ( 0.5768, 0.2483)
1945 .. controls ( 0.5547, 0.2722) and ( 0.5524, 0.3288) .. ( 0.5015, 0.3207)
1946 --cycle
1947 (-0.5678, 0.3115)
1948 .. controls (-0.5832, 0.3118) and (-0.6140, 0.2810) .. (-0.6269, 0.2706)
1949 .. controls (-0.6185, 0.2412) and (-0.5926, 0.1953) .. (-0.5973, 0.1685)
1950 .. controls (-0.6029, 0.1373) and (-0.6320, 0.1239) .. (-0.6369, 0.0996)
1951 .. controls (-0.6406, 0.0816) and (-0.6303, 0.0652) .. (-0.6237, 0.0493)
1952 .. controls (-0.6147, 0.0275) and (-0.6000,-0.0443) .. (-0.5641,-0.0258)
1953 .. controls (-0.5134,-0.0018) and (-0.5902, 0.0606) .. (-0.5641, 0.1074)
1954 .. controls (-0.5332, 0.1697) and (-0.4913, 0.1444) .. (-0.4481, 0.1593)
1955 .. controls (-0.3913, 0.1792) and (-0.3439, 0.2446) .. (-0.3545, 0.3046)
1956 -- (-0.4568, 0.2201)
1957 -- (-0.5588, 0.2201)
1958 .. controls (-0.5549, 0.2390) and (-0.5305, 0.3109) .. (-0.5678, 0.3115)
1959 --cycle
1960 ( 0.2243, 0.2813)
1961 -- ( 0.1631, 0.2450)
1962 -- ( 0.0965, 0.2281)
1963 -- ( 0.1689, 0.1131)
1964 -- ( 0.2065, 0.0861)
1965 .. controls ( 0.2453, 0.0564) and ( 0.2384, 0.0410) .. ( 0.2923, 0.0323)
1966 -- ( 0.2988,-0.0188)
1967 .. controls ( 0.2994,-0.0695) and ( 0.2657,-0.0796) .. ( 0.2249,-0.0579)
1968 .. controls ( 0.1337,-0.0093) and ( 0.1545, 0.0219) .. ( 0.1102, 0.0744)
1969 .. controls ( 0.0914, 0.0967) and ( 0.0807, 0.1010) .. ( 0.0539, 0.1089)
1970 .. controls ( 0.0562, 0.0613) and ( 0.0756,-0.0434) .. ( 0.0403,-0.0825)
1971 .. controls ( 0.0293,-0.0948) and (-0.0336,-0.1168) .. (-0.0567,-0.1294)
1972 .. controls (-0.0615,-0.1087) and (-0.0777,-0.0729) .. (-0.0703,-0.0546)

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1973 .. controls (-0.0586,-0.0251) and ( 0.0562, 0.0040) .. (-0.0152, 0.0389)
1974 -- (-0.0397, 0.0480)
1975 -- (-0.0737, 0.0578)
1976 .. controls (-0.0806, 0.0391) and (-0.0849, 0.0192) .. (-0.1018, 0.0068)
1977 .. controls (-0.1154,-0.0032) and (-0.1352,-0.0018) .. (-0.1438,-0.0212)
1978 .. controls (-0.1562,-0.0491) and (-0.1117,-0.1243) .. (-0.0874,-0.1373)
1979 .. controls (-0.0745,-0.1434) and (-0.0687,-0.1394) .. (-0.0567,-0.1373)
1980 .. controls (-0.0358,-0.2033) and (-0.0062,-0.1612) .. ( 0.0370,-0.1500)
1981 -- ( 0.1050,-0.1379)
1982 .. controls ( 0.0882,-0.0871) and ( 0.0808,-0.0999) .. ( 0.0965,-0.0443)
1983 .. controls ( 0.1454,-0.0619) and ( 0.1336,-0.0743) .. ( 0.1664,-0.0940)
1984 .. controls ( 0.1897,-0.1081) and ( 0.2226,-0.1052) .. ( 0.2361,-0.1388)
1985 .. controls ( 0.2495,-0.1724) and ( 0.2245,-0.1963) .. ( 0.2412,-0.2584)
1986 .. controls ( 0.2526,-0.2569) and ( 0.2622,-0.2548) .. ( 0.2735,-0.2584)
1987 .. controls ( 0.2987,-0.2708) and ( 0.3225,-0.3241) .. ( 0.3212,-0.3506)
1988 .. controls ( 0.3203,-0.3711) and ( 0.3053,-0.3950) .. ( 0.3008,-0.4443)
1989 -- ( 0.2497,-0.4187)
1990 .. controls ( 0.2599,-0.4479) and ( 0.2621,-0.4475) .. ( 0.2905,-0.4528)
1991 .. controls ( 0.2877,-0.4715) and ( 0.2799,-0.4998) .. ( 0.2905,-0.5182)
1992 .. controls ( 0.2991,-0.5392) and ( 0.3228,-0.5357) .. ( 0.3346,-0.5182)
1993 .. controls ( 0.3506,-0.4943) and ( 0.3355,-0.4515) .. ( 0.3532,-0.4203)
1994 .. controls ( 0.3716,-0.3881) and ( 0.4096,-0.3844) .. ( 0.4084,-0.3499)
1995 .. controls ( 0.4074,-0.3241) and ( 0.3866,-0.3087) .. ( 0.3728,-0.2897)
1996 -- ( 0.3426,-0.2337)
1997 -- ( 0.2989,-0.1879)
1998 .. controls ( 0.2810,-0.1587) and ( 0.2976,-0.1327) .. ( 0.3187,-0.1323)
1999 .. controls ( 0.3342,-0.1319) and ( 0.3489,-0.1451) .. ( 0.3603,-0.1541)
2000 .. controls ( 0.3817,-0.1712) and ( 0.4026,-0.1894) .. ( 0.4144,-0.2146)
2001 .. controls ( 0.4299,-0.2477) and ( 0.4289,-0.2977) .. ( 0.4712,-0.3110)
2002 .. controls ( 0.4957,-0.3188) and ( 0.5167,-0.3024) .. ( 0.5044,-0.2753)
2003 .. controls ( 0.4967,-0.2585) and ( 0.4769,-0.2471) .. ( 0.4676,-0.2227)
2004 .. controls ( 0.4582,-0.1981) and ( 0.4681,-0.1743) .. ( 0.4488,-0.1492)
2005 .. controls ( 0.4286,-0.1227) and ( 0.3809,-0.1095) .. ( 0.3621,-0.0696)
2006 .. controls ( 0.3402,-0.0230) and ( 0.3896, 0.0270) .. ( 0.3092, 0.0408)
2007 -- ( 0.3532, 0.1933)
2008 -- ( 0.3944, 0.2536)
2009 -- ( 0.3433, 0.2765)
2010 --cycle
2011 ( 0.2497, 0.2450)
2012 -- ( 0.2782, 0.2025)
2013 .. controls ( 0.2843, 0.1911) and ( 0.2884, 0.1815) .. ( 0.2900, 0.1685)
2014 .. controls ( 0.3021, 0.0654) and ( 0.1495, 0.1479) .. ( 0.2135, 0.2245)
2015 .. controls ( 0.2246, 0.2378) and ( 0.2346, 0.2396) .. ( 0.2497, 0.2450)
2016 --cycle
2017 ( 0.8836, 0.2157)
2018 .. controls ( 0.8688, 0.2061) and ( 0.8571, 0.1889) .. ( 0.8687, 0.1736)
2019 .. controls ( 0.8785, 0.1608) and ( 0.8967, 0.1613) .. ( 0.9161, 0.1578)
2020 --cycle
2021 (-0.3035, 0.1940)
2022 .. controls (-0.3340, 0.1390) and (-0.3508, 0.1491) .. (-0.3624, 0.1300)
2023 .. controls (-0.3738, 0.1112) and (-0.3588, 0.0896) .. (-0.3288, 0.0972)
2024 .. controls (-0.2842, 0.1084) and (-0.2392, 0.1714) .. (-0.3035, 0.1940)
2025 --cycle

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2026      ( 0.4710, 0.1940)
2027      .. controls ( 0.4330, 0.1525) and ( 0.3961, 0.1447) .. ( 0.4114, 0.0833)
2028      .. controls ( 0.4294, 0.0897) and ( 0.4596, 0.1056) .. ( 0.4776, 0.0984)
2029      .. controls ( 0.5010, 0.0888) and ( 0.5182, 0.0420) .. ( 0.4925, 0.0231)
2030      .. controls ( 0.4698, 0.0064) and ( 0.4500, 0.0299) .. ( 0.3944, 0.0153)
2031      .. controls ( 0.4243,-0.0189) and ( 0.4618,-0.0333) .. ( 0.4765,-0.0621)
2032      .. controls ( 0.4928,-0.0939) and ( 0.4729,-0.1183) .. ( 0.4881,-0.1406)
2033      .. controls ( 0.4977,-0.1549) and ( 0.5241,-0.1630) .. ( 0.5425,-0.1894)
2034      .. controls ( 0.5557,-0.2085) and ( 0.5562,-0.2282) .. ( 0.5657,-0.2485)
2035      -- ( 0.6122,-0.3251)
2036      .. controls ( 0.6335,-0.3720) and ( 0.6160,-0.3973) .. ( 0.6323,-0.4443)
2037      .. controls ( 0.6532,-0.5042) and ( 0.6754,-0.5231) .. ( 0.6973,-0.5440)
2038      -- ( 0.7289,-0.4899)
2039      .. controls ( 0.7138,-0.4739) and ( 0.6992,-0.4579) .. ( 0.6886,-0.4358)
2040      -- ( 0.6489,-0.2690)
2041      .. controls ( 0.6485,-0.2445) and ( 0.6654,-0.2180) .. ( 0.6598,-0.2002)
2042      .. controls ( 0.6522,-0.1752) and ( 0.6202,-0.1899) .. ( 0.5938,-0.1612)
2043      .. controls ( 0.5619,-0.1263) and ( 0.5907,-0.0980) .. ( 0.5797,-0.0720)
2044      .. controls ( 0.5714,-0.0525) and ( 0.5434,-0.0441) .. ( 0.5374,-0.0184)
2045      .. controls ( 0.5319, 0.0056) and ( 0.5522, 0.0300) .. ( 0.5533, 0.0578)
2046      .. controls ( 0.5548, 0.0943) and ( 0.4981, 0.1701) .. ( 0.4710, 0.1940)
2047      --cycle
2048      (-0.9001, 0.1862)
2049      -- (-0.9386, 0.1201)
2050      .. controls (-0.9374, 0.1181) and (-0.9371, 0.1158) .. (-0.9356, 0.1139)
2051      .. controls (-0.9242, 0.0996) and (-0.9046, 0.0893) .. (-0.8911, 0.0660)
2052      .. controls (-0.8684, 0.0268) and (-0.8960, 0.0297) .. (-0.8592,-0.0296)
2053      .. controls (-0.8262,-0.0830) and (-0.8655,-0.1092) .. (-0.7971,-0.1209)
2054      -- (-0.7875, 0.0068)
2055      -- (-0.8579, 0.1174)
2056      --cycle
2057      (-0.4453, 0.0979)
2058      .. controls (-0.4922, 0.0916) and (-0.4988, 0.0347) .. (-0.4759, 0.0116)
2059      .. controls (-0.4491,-0.0149) and (-0.4165, 0.0208) .. (-0.3900, 0.0116)
2060      .. controls (-0.3555,-0.0011) and (-0.3800,-0.0410) .. (-0.3751,-0.0698)
2061      -- (-0.3537,-0.1294)
2062      .. controls (-0.3428,-0.1879) and (-0.4042,-0.1777) .. (-0.3801,-0.2656)
2063      .. controls (-0.3617,-0.2531) and (-0.3352,-0.2292) .. (-0.3122,-0.2330)
2064      .. controls (-0.2845,-0.2375) and (-0.2669,-0.2694) .. (-0.2543,-0.2911)
2065      .. controls (-0.2183,-0.3533) and (-0.2004,-0.3613) .. (-0.2184,-0.4358)
2066      .. controls (-0.3300,-0.4097) and (-0.2723,-0.5065) .. (-0.2483,-0.5549)
2067      -- (-0.2129,-0.6314)
2068      .. controls (-0.2017,-0.6508) and (-0.1900,-0.6661) .. (-0.1670,-0.6712)
2069      .. controls (-0.1211,-0.6813) and (-0.1100,-0.6527) .. (-0.1163,-0.6145)
2070      .. controls (-0.1327,-0.6119) and (-0.1427,-0.6118) .. (-0.1568,-0.6009)
2071      .. controls (-0.1780,-0.5845) and (-0.2123,-0.5041) .. (-0.2042,-0.4783)
2072      .. controls (-0.1947,-0.4484) and (-0.1575,-0.4121) .. (-0.1333,-0.3932)
2073      -- (-0.1527,-0.3251)
2074      -- (-0.1588,-0.2656)
2075      .. controls (-0.2187,-0.2715) and (-0.2083,-0.2536) .. (-0.2457,-0.2163)
2076      .. controls (-0.2684,-0.1935) and (-0.2911,-0.1886) .. (-0.2996,-0.1546)
2077      -- (-0.2996,-0.1209)
2078      -- (-0.3232,-0.0698)

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2079 .. controls (-0.3283,-0.0435) and (-0.3124,-0.0260) .. (-0.3175,-0.0041)
2080 .. controls (-0.3251, 0.0283) and (-0.3891, 0.0917) .. (-0.4227, 0.0973)
2081 .. controls (-0.4311, 0.0987) and (-0.4386, 0.0989) .. (-0.4453, 0.0979)
2082 --cycle
2083 (-0.1163,-0.6145)
2084 -- (-0.0812,-0.6009)
2085 -- (-0.0509,-0.4868)
2086 -- (-0.0567,-0.4528)
2087 .. controls (-0.1227,-0.4845) and (-0.1350,-0.5483) .. (-0.1163,-0.6145)
2088 --cycle
2089 ( 0.9165, 0.0573)
2090 .. controls ( 0.8982, 0.0512) and ( 0.8800, 0.0260) .. ( 0.8880,-0.0013)
2091 .. controls ( 0.8973,-0.0334) and ( 0.9330,-0.0408) .. ( 0.9466,-0.0703)
2092 .. controls ( 0.9528,-0.0838) and ( 0.9514,-0.0964) .. ( 0.9506,-0.1091)
2093 -- ( 1.0000,-0.0243)
2094 .. controls ( 0.9816,-0.0179) and ( 0.9678,-0.0119) .. ( 0.9563, 0.0077)
2095 .. controls ( 0.9465, 0.0244) and ( 0.9476, 0.0488) .. ( 0.9340, 0.0564)
2096 .. controls ( 0.9288, 0.0593) and ( 0.9227, 0.0593) .. ( 0.9165, 0.0573)
2097 --cycle
2098 (-0.7064, 0.0069)
2099 .. controls (-0.7128, 0.0077) and (-0.7187, 0.0075) .. (-0.7237, 0.0061)
2100 .. controls (-0.7255, 0.0030) and (-0.7310, 0.0025) .. (-0.7316,-0.0115)
2101 .. controls (-0.7321,-0.0230) and (-0.7071,-0.1058) .. (-0.6984,-0.1096)
2102 .. controls (-0.6872,-0.1176) and (-0.6721,-0.1116) .. (-0.6609,-0.1096)
2103 .. controls (-0.6502,-0.1046) and (-0.6316,-0.0986) .. (-0.6242,-0.0900)
2104 .. controls (-0.5901,-0.0507) and (-0.6615, 0.0017) .. (-0.7064, 0.0069)
2105 --cycle
2106 (-1.0000, 0.0068)
2107 -- (-1.0000, 0.0020)
2108 -- (-0.9548,-0.0788)
2109 .. controls (-0.9170,-0.0310) and (-0.9342,-0.0158) .. (-1.0000, 0.0068)
2110 --cycle
2111 (-0.2643, 0.0054)
2112 .. controls (-0.2853,-0.0295) and (-0.2523,-0.0713) .. (-0.2182,-0.0843)
2113 .. controls (-0.2024,-0.0902) and (-0.1781,-0.0944) .. (-0.1687,-0.0757)
2114 .. controls (-0.1530,-0.0441) and (-0.2378, 0.0095) .. (-0.2643, 0.0054)
2115 --cycle
2116 ( 0.6299,-0.0102)
2117 .. controls ( 0.6155,-0.0145) and ( 0.6071,-0.0342) .. ( 0.6128,-0.0510)
2118 .. controls ( 0.6198,-0.0721) and ( 0.6440,-0.0790) .. ( 0.6606,-0.0986)
2119 .. controls ( 0.6738,-0.1143) and ( 0.6761,-0.1328) .. ( 0.6948,-0.1437)
2120 .. controls ( 0.7092,-0.1520) and ( 0.7311,-0.1484) .. ( 0.7401,-0.1664)
2121 .. controls ( 0.7461,-0.1784) and ( 0.7351,-0.2363) .. ( 0.7348,-0.2570)
2122 .. controls ( 0.7336,-0.3524) and ( 0.7289,-0.3324) .. ( 0.7620,-0.4187)
2123 .. controls ( 0.7631,-0.4216) and ( 0.7642,-0.4246) .. ( 0.7652,-0.4275)
2124 -- ( 0.8003,-0.3672)
2125 .. controls ( 0.7976,-0.3636) and ( 0.7942,-0.3606) .. ( 0.7918,-0.3568)
2126 .. controls ( 0.7778,-0.3349) and ( 0.7645,-0.2537) .. ( 0.7970,-0.2417)
2127 .. controls ( 0.8206,-0.2330) and ( 0.8347,-0.2671) .. ( 0.8432,-0.2822)
2128 -- ( 0.8469,-0.2872)
2129 -- ( 0.8787,-0.2326)
2130 -- ( 0.8594,-0.1993)
2131 .. controls ( 0.8496,-0.1847) and ( 0.7996,-0.1314) .. ( 0.7847,-0.1281)

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```

2132 .. controls ( 0.7712,-0.1229) and ( 0.7642,-0.1268) .. ( 0.7518,-0.1281)
2133 .. controls ( 0.7451,-0.1148) and ( 0.7397,-0.1014) .. ( 0.7293,-0.0886)
2134 -- ( 0.6461,-0.0117)
2135 .. controls ( 0.6402,-0.0090) and ( 0.6347,-0.0087) .. ( 0.6299,-0.0102)
2136 --cycle
2137 (-0.5178,-0.0844)
2138 .. controls (-0.5451,-0.0820) and (-0.5852,-0.0947) .. (-0.5902,-0.1144)
2139 .. controls (-0.6007,-0.1557) and (-0.5621,-0.1731) .. (-0.5414,-0.1997)
2140 .. controls (-0.5274,-0.2177) and (-0.5229,-0.2355) .. (-0.5044,-0.2525)
2141 .. controls (-0.4888,-0.2669) and (-0.4706,-0.2705) .. (-0.4543,-0.2923)
2142 .. controls (-0.4420,-0.3087) and (-0.4220,-0.3707) .. (-0.4141,-0.3932)
2143 .. controls (-0.3620,-0.3875) and (-0.3060,-0.4031) .. (-0.3060,-0.3592)
2144 .. controls (-0.3060,-0.3272) and (-0.3358,-0.3272) .. (-0.3716,-0.3008)
2145 .. controls (-0.4367,-0.2529) and (-0.4253,-0.2451) .. (-0.4621,-0.1914)
2146 .. controls (-0.4700,-0.1800) and (-0.4814,-0.1685) .. (-0.4867,-0.1556)
2147 .. controls (-0.4970,-0.1308) and (-0.4804,-0.1088) .. (-0.4966,-0.0923)
2148 .. controls (-0.5011,-0.0877) and (-0.5087,-0.0853) .. (-0.5178,-0.0844)
2149 --cycle
2150 (-0.4165,-0.0846)
2151 .. controls (-0.4357,-0.0807) and (-0.4622,-0.1075) .. (-0.4395,-0.1440)
2152 .. controls (-0.4316,-0.1566) and (-0.4254,-0.1571) .. (-0.4141,-0.1634)
2153 .. controls (-0.4094,-0.1522) and (-0.4042,-0.1415) .. (-0.4019,-0.1294)
2154 .. controls (-0.3960,-0.1004) and (-0.4049,-0.0870) .. (-0.4165,-0.0846)
2155 --cycle
2156 (-0.9358,-0.1125)
2157 -- (-0.8813,-0.2098)
2158 .. controls (-0.8768,-0.1903) and (-0.8656,-0.1673) .. (-0.8723,-0.1485)
2159 .. controls (-0.8801,-0.1269) and (-0.9022,-0.1274) .. (-0.9358,-0.1125)
2160 --cycle
2161 ( 0.1455,-0.1458)
2162 .. controls ( 0.1402,-0.1449) and ( 0.1336,-0.1452) .. ( 0.1255,-0.1471)
2163 .. controls ( 0.0901,-0.1850) and ( 0.1064,-0.2454) .. ( 0.1360,-0.2301)
2164 .. controls ( 0.1569,-0.2194) and ( 0.1827,-0.1522) .. ( 0.1455,-0.1458)
2165 --cycle
2166 (-0.1477,-0.1474)
2167 .. controls (-0.1646,-0.1458) and (-0.1813,-0.1543) .. (-0.1847,-0.1659)
2168 .. controls (-0.1889,-0.1806) and (-0.1612,-0.2953) .. (-0.1163,-0.2315)
2169 -- (-0.0420,-0.4418)
2170 .. controls (-0.0291,-0.4661) and (-0.0068,-0.4600) .. ( 0.0136,-0.4880)
2171 .. controls ( 0.0294,-0.5097) and ( 0.0259,-0.5331) .. ( 0.0419,-0.5487)
2172 .. controls ( 0.0694,-0.5755) and ( 0.1462,-0.5710) .. ( 0.1798,-0.6001)
2173 -- ( 0.2188,-0.6436)
2174 .. controls ( 0.2392,-0.6605) and ( 0.2566,-0.6577) .. ( 0.2804,-0.6838)
2175 .. controls ( 0.3122,-0.7186) and ( 0.3037,-0.7586) .. ( 0.3603,-0.7592)
2176 .. controls ( 0.3537,-0.7217) and ( 0.3358,-0.6781) .. ( 0.3603,-0.6427)
2177 .. controls ( 0.3743,-0.6222) and ( 0.3978,-0.6232) .. ( 0.4032,-0.6039)
2178 .. controls ( 0.4084,-0.5852) and ( 0.3901,-0.5654) .. ( 0.3712,-0.5741)
2179 .. controls ( 0.3573,-0.5804) and ( 0.3558,-0.5936) .. ( 0.3518,-0.6044)
2180 .. controls ( 0.3319,-0.6046) and ( 0.2996,-0.6092) .. ( 0.2842,-0.6044)
2181 .. controls ( 0.2568,-0.5917) and ( 0.2515,-0.5648) .. ( 0.2231,-0.5501)
2182 .. controls ( 0.1960,-0.5359) and ( 0.1632,-0.5421) .. ( 0.1413,-0.5292)
2183 -- ( 0.0626,-0.4601)
2184 .. controls ( 0.0525,-0.4430) and ( 0.0547,-0.4207) .. ( 0.0440,-0.4065)

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2185 .. controls ( 0.0320,-0.3906) and ( 0.0076,-0.3898) .. (-0.0104,-0.3714)
2186 .. controls (-0.0515,-0.3289) and ( 0.0146,-0.2721) .. (-0.0737,-0.2358)
2187 .. controls (-0.0903,-0.2290) and (-0.0917,-0.2313) .. (-0.1098,-0.2315)
2188 -- (-0.1098,-0.1892)
2189 .. controls (-0.1137,-0.1607) and (-0.1308,-0.1491) .. (-0.1477,-0.1474)
2190 --cycle
2191 (-0.7679,-0.1481)
2192 .. controls (-0.8119,-0.1523) and (-0.8157,-0.2051) .. (-0.8303,-0.2401)
2193 -- (-0.8453,-0.2740)
2194 -- (-0.8299,-0.3015)
2195 .. controls (-0.7861,-0.2968) and (-0.8116,-0.2403) .. (-0.7732,-0.2278)
2196 .. controls (-0.7561,-0.2223) and (-0.7349,-0.2415) .. (-0.7204,-0.2497)
2197 .. controls (-0.6711,-0.2774) and (-0.6473,-0.2864) .. (-0.6524,-0.3506)
2198 -- (-0.6787,-0.3422)
2199 .. controls (-0.6786,-0.3475) and (-0.6826,-0.3544) .. (-0.6787,-0.3655)
2200 .. controls (-0.6635,-0.4244) and (-0.5943,-0.3658) .. (-0.5763,-0.3760)
2201 .. controls (-0.5586,-0.3861) and (-0.5497,-0.4251) .. (-0.5357,-0.4418)
2202 .. controls (-0.5118,-0.4701) and (-0.4694,-0.4662) .. (-0.4504,-0.5047)
2203 .. controls (-0.4231,-0.5599) and (-0.4535,-0.6772) .. (-0.4451,-0.7421)
2204 .. controls (-0.4389,-0.7901) and (-0.4023,-0.8005) .. (-0.3912,-0.8443)
2205 .. controls (-0.3883,-0.8558) and (-0.3874,-0.8667) .. (-0.3869,-0.8774)
2206 -- (-0.3386,-0.8778)
2207 .. controls (-0.3371,-0.8645) and (-0.3342,-0.8523) .. (-0.3394,-0.8358)
2208 .. controls (-0.3448,-0.8167) and (-0.3914,-0.7567) .. (-0.3962,-0.6996)
2209 .. controls (-0.4039,-0.6074) and (-0.3294,-0.5871) .. (-0.3545,-0.4954)
2210 -- (-0.3886,-0.5039)
2211 -- (-0.4196,-0.4442)
2212 -- (-0.4864,-0.4090)
2213 -- (-0.5345,-0.3241)
2214 -- (-0.6106,-0.2802)
2215 -- (-0.6106,-0.1975)
2216 .. controls (-0.6301,-0.2027) and (-0.6486,-0.2101) .. (-0.6694,-0.2022)
2217 .. controls (-0.7004,-0.1904) and (-0.7133,-0.1559) .. (-0.7464,-0.1495)
2218 .. controls (-0.7544,-0.1479) and (-0.7616,-0.1475) .. (-0.7679,-0.1481)
2219 --cycle
2220 ( 0.0029,-0.2060)
2221 .. controls (-0.0139,-0.2731) and ( 0.0196,-0.2608) .. ( 0.0476,-0.3014)
2222 .. controls ( 0.0682,-0.3314) and ( 0.0511,-0.3569) .. ( 0.0750,-0.3784)
2223 .. controls ( 0.0974,-0.3988) and ( 0.1304,-0.3876) .. ( 0.1549,-0.4019)
2224 .. controls ( 0.1795,-0.4164) and ( 0.1878,-0.4529) .. ( 0.1987,-0.4783)
2225 .. controls ( 0.2461,-0.4539) and ( 0.2519,-0.4021) .. ( 0.2180,-0.3618)
2226 .. controls ( 0.1964,-0.3362) and ( 0.1652,-0.3426) .. ( 0.1414,-0.3257)
2227 .. controls ( 0.1198,-0.3103) and ( 0.1183,-0.2881) .. ( 0.1007,-0.2689)
2228 .. controls ( 0.0838,-0.2504) and ( 0.0265,-0.2166) .. ( 0.0029,-0.2060)
2229 --cycle
2230 ( 0.2327,-0.2826)
2231 .. controls ( 0.1961,-0.2955) and ( 0.1961,-0.3123) .. ( 0.2327,-0.3251)
2232 --cycle
2233 (-0.7548,-0.3137)
2234 .. controls (-0.7774,-0.3164) and (-0.7890,-0.3323) .. (-0.7986,-0.3573)
2235 -- (-0.7759,-0.3979)
2236 .. controls (-0.7735,-0.3968) and (-0.7711,-0.3964) .. (-0.7688,-0.3946)
2237 -- (-0.7205,-0.3166)

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2238 .. controls (-0.7341,-0.3135) and (-0.7454,-0.3126) .. (-0.7548,-0.3137)
2239 --cycle
2240 ( 0.4114,-0.3847)
2241 .. controls ( 0.4216,-0.4136) and ( 0.4238,-0.4142) .. ( 0.4540,-0.4102)
2242 -- ( 0.4540,-0.3932)
2243 --cycle
2244 ( 0.5395,-0.3997)
2245 .. controls ( 0.5263,-0.3990) and ( 0.5044,-0.4032) .. ( 0.4625,-0.4018)
2246 -- ( 0.4780,-0.4954)
2247 .. controls ( 0.4757,-0.5287) and ( 0.4518,-0.5542) .. ( 0.4648,-0.5776)
2248 .. controls ( 0.4852,-0.6142) and ( 0.5202,-0.5603) .. ( 0.5614,-0.5929)
2249 .. controls ( 0.5752,-0.6038) and ( 0.6063,-0.6359) .. ( 0.6275,-0.6638)
2250 -- ( 0.6570,-0.6132)
2251 .. controls ( 0.6460,-0.6042) and ( 0.6347,-0.5954) .. ( 0.6268,-0.5865)
2252 -- ( 0.5937,-0.5346)
2253 .. controls ( 0.5648,-0.5023) and ( 0.5031,-0.4880) .. ( 0.5646,-0.4273)
2254 .. controls ( 0.5574,-0.4062) and ( 0.5528,-0.4005) .. ( 0.5395,-0.3997)
2255 --cycle
2256 (-0.6609,-0.4273)
2257 .. controls (-0.7027,-0.4247) and (-0.7300,-0.4414) .. (-0.7397,-0.4624)
2258 -- (-0.7047,-0.5249)
2259 .. controls (-0.7013,-0.5263) and (-0.6989,-0.5282) .. (-0.6950,-0.5294)
2260 .. controls (-0.6935,-0.4878) and (-0.6933,-0.4806) .. (-0.6609,-0.4528)
2261 --cycle
2262 (-0.5689,-0.4528)
2263 .. controls (-0.6368,-0.4677) and (-0.6352,-0.5020) .. (-0.6354,-0.5634)
2264 -- (-0.5757,-0.6071)
2265 -- (-0.5162,-0.6826)
2266 .. controls (-0.5073,-0.6508) and (-0.5037,-0.6125) .. (-0.5241,-0.5838)
2267 .. controls (-0.5384,-0.5639) and (-0.5622,-0.5584) .. (-0.5689,-0.5361)
2268 .. controls (-0.5775,-0.5167) and (-0.5648,-0.4918) .. (-0.5689,-0.4528)
2269 --cycle
2270 (-0.6354,-0.5634)
2271 .. controls (-0.6583,-0.5576) and (-0.6713,-0.5579) .. (-0.6839,-0.5619)
2272 -- (-0.6487,-0.6248)
2273 .. controls (-0.6395,-0.6053) and (-0.6326,-0.5852) .. (-0.6354,-0.5634)
2274 --cycle
2275 (-0.0056,-0.5890)
2276 .. controls (-0.0554,-0.6155) and (-0.0426,-0.6370) .. (-0.0606,-0.6818)
2277 -- (-0.1199,-0.7847)
2278 .. controls (-0.1298,-0.8015) and (-0.1531,-0.8317) .. (-0.1499,-0.8510)
2279 .. controls (-0.1482,-0.8615) and (-0.1397,-0.8702) .. (-0.1295,-0.8795)
2280 -- (-0.0507,-0.8802)
2281 .. controls (-0.0629,-0.8583) and (-0.0745,-0.8380) .. (-0.0742,-0.8358)
2282 .. controls (-0.0792,-0.8239) and (-0.0776,-0.8135) .. (-0.0742,-0.8027)
2283 .. controls (-0.0460,-0.7520) and ( 0.0016,-0.7834) .. ( 0.0277,-0.7780)
2284 .. controls ( 0.0760,-0.7679) and ( 0.1284,-0.6914) .. ( 0.1207,-0.6405)
2285 .. controls ( 0.1150,-0.6017) and ( 0.0841,-0.6082) .. ( 0.0711,-0.6267)
2286 .. controls ( 0.0620,-0.6397) and ( 0.0556,-0.7141) .. ( 0.0539,-0.7336)
2287 .. controls (-0.0413,-0.7085) and ( 0.0139,-0.6637) .. (-0.0056,-0.5890)
2288 --cycle
2289 ( 0.4284,-0.6571)
2290 .. controls ( 0.4285,-0.7307) and ( 0.4284,-0.7652) .. ( 0.5135,-0.7336)

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2291 .. controls ( 0.5170,-0.7469) and ( 0.5220,-0.7585) .. ( 0.5179,-0.7726)
2292 .. controls ( 0.5091,-0.8019) and ( 0.4473,-0.8546) .. ( 0.4851,-0.8847)
2293 -- ( 0.4987,-0.8848)
2294 -- ( 0.5768,-0.7509)
2295 .. controls ( 0.5767,-0.7509) and ( 0.5767,-0.7507) .. ( 0.5767,-0.7507)
2296 .. controls ( 0.5412,-0.6652) and ( 0.5083,-0.6726) .. ( 0.4284,-0.6571)
2297 --cycle
2298 (-0.2914,-0.6672)
2299 .. controls (-0.2998,-0.6666) and (-0.3106,-0.6686) .. (-0.3250,-0.6743)
2300 .. controls (-0.3545,-0.7128) and (-0.3081,-0.7358) .. (-0.2850,-0.7678)
2301 .. controls (-0.2710,-0.7873) and (-0.2601,-0.8137) .. (-0.2351,-0.8216)
2302 .. controls (-0.2083,-0.8301) and (-0.1916,-0.8105) .. (-0.1960,-0.7845)
2303 .. controls (-0.2008,-0.7566) and (-0.2232,-0.7418) .. (-0.2396,-0.7216)
2304 .. controls (-0.2612,-0.6950) and (-0.2660,-0.6690) .. (-0.2914,-0.6672)
2305 --cycle
2306 (-0.5641,-0.6998)
2307 .. controls (-0.5850,-0.6984) and (-0.5808,-0.7367) .. (-0.5766,-0.7507)
2308 .. controls (-0.5748,-0.7566) and (-0.5723,-0.7598) .. (-0.5702,-0.7648)
2309 -- (-0.5492,-0.8022)
2310 .. controls (-0.5310,-0.8247) and (-0.5120,-0.8367) .. (-0.5052,-0.8613)
2311 .. controls (-0.5044,-0.8642) and (-0.5062,-0.8717) .. (-0.5063,-0.8763)
2312 -- (-0.4585,-0.8767)
2313 .. controls (-0.4596,-0.7984) and (-0.5013,-0.7963) .. (-0.5234,-0.7583)
2314 .. controls (-0.5344,-0.7394) and (-0.5352,-0.7120) .. (-0.5535,-0.7030)
2315 .. controls (-0.5576,-0.7010) and (-0.5611,-0.7000) .. (-0.5641,-0.6998)
2316 --cycle
2317 ( 0.1990,-0.7341)
2318 .. controls ( 0.1094,-0.7768) and ( 0.2330,-0.8330) .. ( 0.2586,-0.8828)
2319 -- ( 0.3183,-0.8833)
2320 .. controls ( 0.3165,-0.8684) and ( 0.3066,-0.8565) .. ( 0.2991,-0.8428)
2321 .. controls ( 0.2762,-0.8010) and ( 0.2508,-0.7418) .. ( 0.1990,-0.7341)
2322 --cycle
2323 ( 0.3603,-0.7592)
2324 -- ( 0.3859,-0.8188)
2325 .. controls ( 0.4178,-0.7853) and ( 0.4108,-0.7527) .. ( 0.3603,-0.7592)
2326 --cycle
2327 ( 0.4369,-0.8443)
2328 .. controls ( 0.4147,-0.8480) and ( 0.3837,-0.8661) .. ( 0.3628,-0.8837)
2329 -- ( 0.4240,-0.8842)
2330 .. controls ( 0.4307,-0.8690) and ( 0.4358,-0.8541) .. ( 0.4369,-0.8443)
2331 --cycle
2332 (-0.3205,-0.8528)
2333 -- (-0.3266,-0.8779)
2334 -- (-0.2773,-0.8783)
2335 .. controls (-0.2800,-0.8719) and (-0.2850,-0.8655) .. (-0.2963,-0.8600)
2336 --cycle
2337 ( 0.1093,-0.8568)
2338 .. controls ( 0.0964,-0.8568) and ( 0.0834,-0.8587) .. ( 0.0710,-0.8600)
2339 .. controls ( 0.0605,-0.8611) and ( 0.0403,-0.8617) .. ( 0.0312,-0.8664)
2340 .. controls ( 0.0240,-0.8701) and ( 0.0203,-0.8751) .. ( 0.0184,-0.8808)
2341 -- ( 0.1002,-0.8815)
2342 -- ( 0.1050,-0.8698)
2343 -- ( 0.1085,-0.8815)

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```

2344 -- ( 0.1641,-0.8820)
2345 .. controls ( 0.1606,-0.8757) and ( 0.1553,-0.8698) .. ( 0.1463,-0.8649)
2346 .. controls ( 0.1347,-0.8586) and ( 0.1221,-0.8568) .. ( 0.1093,-0.8568)
2347 --cycle
2348 ;
2349 }
2350 }
2351 \fi

```

hex/terrain/light woods

The draw style for light woods. The pattern is filled with light green, and outline is not drawn.

```

2352 \tikzset{
2353 hex/terrain/light woods/.style={
2354   draw=none,
2355   fill={rgb,100:red,69;green,98;blue,69}
2356 }
2357 }

```

hex/terrain/light woods

Next, we have light woods.



```

2358 \ifhex@terrain@pic
2359 \tikzset{
2360 hex/terrain/light woods/.pic={
2361   \path[hex/terrain/light woods,pic actions,draw=none]
2362     (-0.4795, 0.8736)
2363     -- (-0.5104, 0.8207)
2364     .. controls (-0.5041, 0.8191) and (-0.4967, 0.8182) .. (-0.4854, 0.8192)
2365     -- (-0.4770, 0.8108)
2366     -- (-0.4854, 0.7856)
2367     -- (-0.5190, 0.8023)
2368     .. controls (-0.5219, 0.7975) and (-0.5245, 0.7958) .. (-0.5272, 0.7916)
2369     -- (-0.5881, 0.6872)
2370     .. controls (-0.5849, 0.6876) and (-0.5819, 0.6876) .. (-0.5782, 0.6885)
2371     .. controls (-0.5524, 0.6946) and (-0.5387, 0.7153) .. (-0.5182, 0.7298)
2372     .. controls (-0.4841, 0.7540) and (-0.4420, 0.7539) .. (-0.4346, 0.7864)
2373     .. controls (-0.4295, 0.8088) and (-0.4470, 0.8265) .. (-0.4572, 0.8444)
2374     .. controls (-0.4631, 0.8549) and (-0.4670, 0.8646) .. (-0.4707, 0.8736)
2375     --cycle
2376     (-0.3185, 0.8722)
2377     .. controls (-0.3478, 0.8487) and (-0.3526, 0.8080) .. (-0.3290, 0.7808)
2378     .. controls (-0.3140, 0.7633) and (-0.2394, 0.7433) .. (-0.2165, 0.7459)
2379     .. controls (-0.1895, 0.7488) and (-0.1787, 0.7643) .. (-0.1561, 0.7725)
2380     .. controls (-0.1380, 0.7791) and (-0.1179, 0.7766) .. (-0.1025, 0.7906)

```

```

2381 .. controls (-0.0719, 0.8182) and (-0.0936, 0.8427) .. (-0.1240, 0.8528)
2382 -- (-0.1323, 0.8192)
2383 -- (-0.1912, 0.8359)
2384 .. controls (-0.1985, 0.8023) and (-0.1999, 0.7965) .. (-0.2332, 0.7856)
2385 .. controls (-0.2512, 0.8363) and (-0.2775, 0.8009) .. (-0.2909, 0.8240)
2386 .. controls (-0.2975, 0.8355) and (-0.2884, 0.8535) .. (-0.2756, 0.8719)
2387 --cycle
2388 (-0.1660, 0.8709)
2389 .. controls (-0.1609, 0.8538) and (-0.1460, 0.8596) .. (-0.1371, 0.8707)
2390 --cycle
2391 ( 0.0768, 0.8689)
2392 .. controls ( 0.0767, 0.8688) and ( 0.0765, 0.8686) .. ( 0.0764, 0.8685)
2393 .. controls ( 0.0704, 0.8503) and ( 0.0779, 0.7592) .. ( 0.1533, 0.7700)
2394 .. controls ( 0.1955, 0.7761) and ( 0.1956, 0.8018) .. ( 0.1871, 0.8359)
2395 -- ( 0.1366, 0.8108)
2396 -- ( 0.1510, 0.8683)
2397 --cycle
2398 ( 0.1840, 0.8680)
2399 .. controls ( 0.1910, 0.8650) and ( 0.1993, 0.8662) .. ( 0.2081, 0.8678)
2400 --cycle
2401 ( 0.2214, 0.8677)
2402 -- ( 0.2459, 0.7939)
2403 .. controls ( 0.1903, 0.7716) and ( 0.2267, 0.7399) .. ( 0.2534, 0.7490)
2404 .. controls ( 0.2925, 0.7624) and ( 0.2842, 0.8066) .. ( 0.2735, 0.8359)
2405 .. controls ( 0.2690, 0.8483) and ( 0.2655, 0.8586) .. ( 0.2619, 0.8674)
2406 --cycle
2407 ( 0.4057, 0.8661)
2408 .. controls ( 0.4149, 0.8349) and ( 0.4483, 0.8068) .. ( 0.4873, 0.8349)
2409 .. controls ( 0.4993, 0.8436) and ( 0.5001, 0.8496) .. ( 0.5065, 0.8612)
2410 .. controls ( 0.5170, 0.8447) and ( 0.5269, 0.8297) .. ( 0.5405, 0.8189)
2411 -- ( 0.5145, 0.8652)
2412 --cycle
2413 (-0.0288, 0.8391)
2414 .. controls (-0.0335, 0.8388) and (-0.0390, 0.8377) .. (-0.0453, 0.8356)
2415 .. controls (-0.0698, 0.8019) and (-0.0347, 0.7882) .. (-0.0173, 0.7966)
2416 .. controls ( 0.0001, 0.8052) and ( 0.0042, 0.8413) .. (-0.0288, 0.8391)
2417 --cycle
2418 ( 0.3888, 0.7856)
2419 -- ( 0.3719, 0.7687)
2420 -- ( 0.3719, 0.7604)
2421 -- ( 0.3888, 0.7435)
2422 -- ( 0.3972, 0.7435)
2423 -- ( 0.4140, 0.7604)
2424 --cycle
2425 (-0.0821, 0.7138)
2426 .. controls (-0.0999, 0.7158) and (-0.1171, 0.7050) .. (-0.1211, 0.6922)
2427 .. controls (-0.1297, 0.6650) and (-0.0695, 0.6250) .. (-0.0468, 0.6186)
2428 .. controls (-0.0352, 0.6169) and (-0.0107, 0.6175) .. ( 0.0022, 0.6186)
2429 .. controls (-0.0326, 0.5765) and (-0.0411, 0.5767) .. (-0.0909, 0.5922)
2430 .. controls (-0.0924, 0.5799) and (-0.0959, 0.5731) .. (-0.0909, 0.5597)
2431 .. controls (-0.0591, 0.4605) and ( 0.1221, 0.6255) .. ( 0.0020, 0.6581)
2432 .. controls (-0.0090, 0.6597) and (-0.0281, 0.6592) .. (-0.0399, 0.6581)
2433 .. controls (-0.0462, 0.6969) and (-0.0645, 0.7118) .. (-0.0821, 0.7138)

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2434 --cycle
2435 ( 0.3704, 0.7106)
2436 .. controls ( 0.3510, 0.7072) and ( 0.3332, 0.6943) .. ( 0.3224, 0.6679)
2437 .. controls ( 0.3172, 0.6530) and ( 0.3220, 0.6121) .. ( 0.3224, 0.5922)
2438 -- ( 0.3056, 0.6154)
2439 .. controls ( 0.2531, 0.6742) and ( 0.2322, 0.5554) .. ( 0.2966, 0.5454)
2440 .. controls ( 0.3239, 0.5412) and ( 0.3417, 0.5630) .. ( 0.3972, 0.5670)
2441 .. controls ( 0.4005, 0.5473) and ( 0.4019, 0.5314) .. ( 0.4237, 0.5231)
2442 .. controls ( 0.4541, 0.5116) and ( 0.4961, 0.5392) .. ( 0.4841, 0.5736)
2443 .. controls ( 0.4794, 0.5870) and ( 0.4556, 0.5991) .. ( 0.4331, 0.6106)
2444 .. controls ( 0.4972, 0.6497) and ( 0.4277, 0.7210) .. ( 0.3704, 0.7106)
2445 --cycle
2446 (-0.4679, 0.7004)
2447 .. controls (-0.5116, 0.6983) and (-0.4629, 0.6153) .. (-0.4266, 0.6632)
2448 .. controls (-0.4200, 0.6718) and (-0.4201, 0.6786) .. (-0.4182, 0.6846)
2449 -- (-0.4434, 0.6958)
2450 .. controls (-0.4536, 0.6993) and (-0.4618, 0.7007) .. (-0.4679, 0.7004)
2451 --cycle
2452 ( 0.5653, 0.7002)
2453 .. controls ( 0.5661, 0.6911) and ( 0.5658, 0.6799) .. ( 0.5704, 0.6702)
2454 .. controls ( 0.5856, 0.6381) and ( 0.6183, 0.6504) .. ( 0.6246, 0.6688)
2455 -- ( 0.6102, 0.6944)
2456 .. controls ( 0.6066, 0.6965) and ( 0.6036, 0.6986) .. ( 0.5984, 0.7002)
2457 .. controls ( 0.5884, 0.7016) and ( 0.5757, 0.7012) .. ( 0.5653, 0.7002)
2458 --cycle
2459 ( 0.1310, 0.6925)
2460 .. controls ( 0.1003, 0.6568) and ( 0.1392, 0.6414) .. ( 0.1582, 0.6530)
2461 .. controls ( 0.1772, 0.6646) and ( 0.1778, 0.7030) .. ( 0.1310, 0.6925)
2462 --cycle
2463 (-0.3425, 0.6846)
2464 .. controls (-0.3485, 0.6703) and (-0.3540, 0.6584) .. (-0.3564, 0.6427)
2465 .. controls (-0.3714, 0.5438) and (-0.2673, 0.5839) .. (-0.3103, 0.6583)
2466 .. controls (-0.3198, 0.6747) and (-0.3272, 0.6765) .. (-0.3425, 0.6846)
2467 --cycle
2468 (-0.1828, 0.6763)
2469 .. controls (-0.2468, 0.6411) and (-0.2396, 0.5532) .. (-0.1659, 0.5602)
2470 .. controls (-0.1273, 0.5639) and (-0.0946, 0.6066) .. (-0.1492, 0.6258)
2471 -- (-0.1828, 0.6006)
2472 --cycle
2473 ( 0.3972, 0.6763)
2474 -- ( 0.4287, 0.6131)
2475 .. controls ( 0.4206, 0.6173) and ( 0.4113, 0.6217) .. ( 0.4056, 0.6258)
2476 -- ( 0.3719, 0.6006)
2477 .. controls ( 0.3635, 0.6415) and ( 0.3652, 0.6489) .. ( 0.3972, 0.6763)
2478 --cycle
2479 ( 0.5737, 0.6319)
2480 -- ( 0.5485, 0.6258)
2481 .. controls ( 0.5516, 0.6201) and ( 0.5520, 0.6138) .. ( 0.5614, 0.6043)
2482 .. controls ( 0.6074, 0.5569) and ( 0.6453, 0.6371) .. ( 0.5737, 0.6319)
2483 --cycle
2484 (-0.6211, 0.6305)
2485 -- (-0.6755, 0.5370)
2486 -- (-0.6787, 0.5166)

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2487 .. controls (-0.6809, 0.5180) and (-0.6832, 0.5188) .. (-0.6854, 0.5203)
2488 -- (-0.7191, 0.4623)
2489 -- (-0.7291, 0.4073)
2490 .. controls (-0.7367, 0.4126) and (-0.7403, 0.4136) .. (-0.7456, 0.4169)
2491 -- (-0.7651, 0.3834)
2492 .. controls (-0.7455, 0.3798) and (-0.7239, 0.3727) .. (-0.7052, 0.3845)
2493 .. controls (-0.6739, 0.3993) and (-0.6763, 0.4662) .. (-0.6703, 0.4998)
2494 .. controls (-0.6178, 0.4665) and (-0.6044, 0.4826) .. (-0.5611, 0.5204)
2495 .. controls (-0.5440, 0.5353) and (-0.5267, 0.5491) .. (-0.5345, 0.5748)
2496 .. controls (-0.5466, 0.6149) and (-0.5841, 0.6243) .. (-0.6211, 0.6305)
2497 --cycle
2498 (-0.6450, 0.5670)
2499 -- (-0.5862, 0.5670)
2500 .. controls (-0.6029, 0.5328) and (-0.6086, 0.5274) .. (-0.6450, 0.5166)
2501 --cycle
2502 ( 0.5940, 0.5141)
2503 .. controls ( 0.5876, 0.5135) and ( 0.5814, 0.5119) .. ( 0.5737, 0.5105)
2504 .. controls ( 0.5529, 0.5005) and ( 0.5203, 0.4878) .. ( 0.5123, 0.4644)
2505 .. controls ( 0.5022, 0.4349) and ( 0.5312, 0.3332) .. ( 0.5982, 0.3551)
2506 .. controls ( 0.6173, 0.3612) and ( 0.6614, 0.3963) .. ( 0.6651, 0.4168)
2507 .. controls ( 0.6700, 0.4432) and ( 0.6406, 0.5019) .. ( 0.6149, 0.5105)
2508 .. controls ( 0.6066, 0.5139) and ( 0.6003, 0.5146) .. ( 0.5940, 0.5141)
2509 --cycle
2510 ( 0.0525, 0.5036)
2511 .. controls ( 0.0223, 0.5016) and ( 0.0014, 0.4715) .. (-0.0147, 0.4493)
2512 .. controls (-0.0480, 0.4823) and (-0.1271, 0.5502) .. (-0.1240, 0.4493)
2513 -- (-0.0819, 0.4661)
2514 .. controls (-0.0631, 0.4289) and ( 0.0054, 0.3259) .. ( 0.0443, 0.3176)
2515 .. controls ( 0.1031, 0.3051) and ( 0.1431, 0.3862) .. ( 0.0694, 0.3989)
2516 .. controls ( 0.0551, 0.3118) and ( 0.0044, 0.4056) .. ( 0.0316, 0.4326)
2517 .. controls ( 0.0741, 0.4748) and ( 0.1233, 0.3699) .. ( 0.1388, 0.4261)
2518 .. controls ( 0.1477, 0.4584) and ( 0.0813, 0.5057) .. ( 0.0525, 0.5036)
2519 --cycle
2520 ( 0.6073, 0.4745)
2521 -- ( 0.6242, 0.4241)
2522 -- ( 0.5569, 0.3989)
2523 -- ( 0.5569, 0.4493)
2524 --cycle
2525 (-0.3498, 0.4626)
2526 .. controls (-0.3744, 0.4586) and (-0.3998, 0.4069) .. (-0.3941, 0.3847)
2527 .. controls (-0.3893, 0.3661) and (-0.3650, 0.3651) .. (-0.3503, 0.3798)
2528 -- (-0.3257, 0.4157)
2529 .. controls (-0.3295, 0.3698) and (-0.2940, 0.3485) .. (-0.2697, 0.3592)
2530 .. controls (-0.2492, 0.3684) and (-0.2611, 0.3898) .. (-0.2697, 0.4024)
2531 .. controls (-0.2865, 0.4277) and (-0.3149, 0.4682) .. (-0.3498, 0.4626)
2532 --cycle
2533 ( 0.7488, 0.4472)
2534 .. controls ( 0.7446, 0.4429) and ( 0.7413, 0.4378) .. ( 0.7395, 0.4315)
2535 .. controls ( 0.7338, 0.4111) and ( 0.7612, 0.3277) .. ( 0.8087, 0.3352)
2536 .. controls ( 0.8094, 0.3354) and ( 0.8102, 0.3361) .. ( 0.8109, 0.3364)
2537 --cycle
2538 (-0.1492, 0.4409)
2539 .. controls (-0.1577, 0.3701) and (-0.1298, 0.3577) .. (-0.0651, 0.3568)

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2540 .. controls (-0.0461, 0.3027) and (-0.0025, 0.3462) .. (-0.0567, 0.3652)
2541 -- (-0.0567, 0.3568)
2542 -- (-0.0651, 0.3652)
2543 -- (-0.0567, 0.3652)
2544 -- (-0.0567, 0.3989)
2545 -- (-0.0988, 0.3905)
2546 .. controls (-0.1116, 0.4252) and (-0.1112, 0.4344) .. (-0.1492, 0.4409)
2547 --cycle
2548 ( 0.2869, 0.4351)
2549 .. controls ( 0.2475, 0.4293) and ( 0.2234, 0.3681) .. ( 0.2795, 0.3485)
2550 -- ( 0.3048, 0.3905)
2551 .. controls ( 0.3028, 0.3760) and ( 0.3013, 0.3442) .. ( 0.3278, 0.3583)
2552 .. controls ( 0.3557, 0.3731) and ( 0.3437, 0.4227) .. ( 0.3046, 0.4338)
2553 .. controls ( 0.2985, 0.4356) and ( 0.2925, 0.4359) .. ( 0.2869, 0.4351)
2554 --cycle
2555 (-0.5352, 0.4038)
2556 .. controls (-0.5519, 0.4042) and (-0.5689, 0.3932) .. (-0.5778, 0.3652)
2557 -- (-0.5358, 0.3652)
2558 -- (-0.5442, 0.3149)
2559 -- (-0.6030, 0.3401)
2560 .. controls (-0.6099, 0.3078) and (-0.5933, 0.2580) .. (-0.5523, 0.2636)
2561 .. controls (-0.5251, 0.2673) and (-0.4980, 0.3070) .. (-0.4910, 0.3316)
2562 .. controls (-0.4799, 0.3705) and (-0.5072, 0.4030) .. (-0.5352, 0.4038)
2563 --cycle
2564 ( 0.4056, 0.3989)
2565 .. controls ( 0.4011, 0.3650) and ( 0.4064, 0.3627) .. ( 0.4392, 0.3568)
2566 .. controls ( 0.4340, 0.3865) and ( 0.4336, 0.3876) .. ( 0.4056, 0.3989)
2567 --cycle
2568 (-0.2248, 0.3737)
2569 -- (-0.2164, 0.3401)
2570 -- (-0.1828, 0.3568)
2571 --cycle
2572 ( 0.4558, 0.3414)
2573 .. controls ( 0.4424, 0.3419) and ( 0.4339, 0.3363) .. ( 0.4224, 0.3316)
2574 -- ( 0.4340, 0.2885)
2575 .. controls ( 0.4635, 0.2154) and ( 0.5405, 0.3381) .. ( 0.4558, 0.3414)
2576 --cycle
2577 (-0.3179, 0.3382)
2578 .. controls (-0.3270, 0.3401) and (-0.3357, 0.3403) .. (-0.3425, 0.3381)
2579 .. controls (-0.3762, 0.3275) and (-0.3957, 0.2970) .. (-0.4013, 0.2644)
2580 -- (-0.3341, 0.2892)
2581 .. controls (-0.3207, 0.2121) and (-0.2456, 0.2402) .. (-0.2545, 0.2892)
2582 .. controls (-0.2586, 0.3110) and (-0.2906, 0.3324) .. (-0.3179, 0.3382)
2583 --cycle
2584 ( 0.3611, 0.3359)
2585 .. controls ( 0.3110, 0.3372) and ( 0.2179, 0.3015) .. ( 0.2626, 0.2392)
2586 -- ( 0.2207, 0.2056)
2587 -- ( 0.2123, 0.2308)
2588 -- ( 0.1955, 0.2308)
2589 .. controls ( 0.1691, 0.1342) and ( 0.2461, 0.1660) .. ( 0.2711, 0.1678)
2590 .. controls ( 0.3105, 0.1704) and ( 0.3525, 0.1635) .. ( 0.3836, 0.2013)
2591 .. controls ( 0.4000, 0.2213) and ( 0.3935, 0.2469) .. ( 0.3552, 0.2434)
2592 .. controls ( 0.3256, 0.2408) and ( 0.3193, 0.2282) .. ( 0.3048, 0.2056)

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2593 .. controls ( 0.2927, 0.2510) and ( 0.2970, 0.2476) .. ( 0.3131, 0.2897)
2594 -- ( 0.3552, 0.2728)
2595 -- ( 0.3636, 0.2980)
2596 -- ( 0.3719, 0.2644)
2597 .. controls ( 0.4287, 0.2825) and ( 0.4092, 0.3226) .. ( 0.3795, 0.3331)
2598 .. controls ( 0.3746, 0.3349) and ( 0.3683, 0.3357) .. ( 0.3611, 0.3359)
2599 --cycle
2600 (-0.7326, 0.3304)
2601 .. controls (-0.7558, 0.2996) and (-0.7303, 0.2839) .. (-0.7147, 0.2917)
2602 .. controls (-0.6982, 0.3000) and (-0.6941, 0.3349) .. (-0.7326, 0.3304)
2603 --cycle
2604 ( 0.5316, 0.3064)
2605 .. controls ( 0.5417, 0.2779) and ( 0.5439, 0.2772) .. ( 0.5737, 0.2813)
2606 .. controls ( 0.5591, 0.3056) and ( 0.5600, 0.3049) .. ( 0.5316, 0.3064)
2607 --cycle
2608 ( 0.7063, 0.2870)
2609 .. controls ( 0.6995, 0.2880) and ( 0.6923, 0.2874) .. ( 0.6840, 0.2844)
2610 .. controls ( 0.6531, 0.2731) and ( 0.6307, 0.2270) .. ( 0.6242, 0.1972)
2611 -- ( 0.6914, 0.2056)
2612 -- ( 0.6914, 0.2475)
2613 -- ( 0.7166, 0.2139)
2614 -- ( 0.7670, 0.2224)
2615 -- ( 0.7670, 0.1887)
2616 -- ( 0.8091, 0.1804)
2617 -- ( 0.7755, 0.1047)
2618 -- ( 0.8343, 0.1131)
2619 .. controls ( 0.8409, 0.1435) and ( 0.8409, 0.1473) .. ( 0.8679, 0.1636)
2620 .. controls ( 0.8652, 0.1490) and ( 0.8470, 0.0581) .. ( 0.8896, 0.0809)
2621 .. controls ( 0.9211, 0.0965) and ( 0.9103, 0.1720) .. ( 0.8896, 0.1909)
2622 .. controls ( 0.8668, 0.2094) and ( 0.8421, 0.2029) .. ( 0.8174, 0.1972)
2623 .. controls ( 0.8135, 0.2098) and ( 0.8137, 0.2162) .. ( 0.8041, 0.2272)
2624 .. controls ( 0.7922, 0.2408) and ( 0.7748, 0.2458) .. ( 0.7601, 0.2552)
2625 .. controls ( 0.7419, 0.2667) and ( 0.7266, 0.2841) .. ( 0.7063, 0.2870)
2626 --cycle
2627 ( 0.6242, 0.1972)
2628 .. controls ( 0.6061, 0.1985) and ( 0.5845, 0.2023) .. ( 0.5690, 0.1902)
2629 .. controls ( 0.5426, 0.1695) and ( 0.5550, 0.1248) .. ( 0.5909, 0.1110)
2630 .. controls ( 0.6168, 0.1011) and ( 0.6421, 0.1125) .. ( 0.6679, 0.1215)
2631 .. controls ( 0.6663, 0.1076) and ( 0.6658, 0.0850) .. ( 0.6679, 0.0720)
2632 .. controls ( 0.6961,-0.0135) and ( 0.8163, 0.0895) .. ( 0.7250, 0.1215)
2633 -- ( 0.6998, 0.0795)
2634 -- ( 0.7166, 0.1299)
2635 -- ( 0.6830, 0.1804)
2636 -- ( 0.6578, 0.1636)
2637 --cycle
2638 ( 0.0950, 0.2671)
2639 .. controls ( 0.0367, 0.2427) and ( 0.0851, 0.1985) .. ( 0.1112, 0.2040)
2640 .. controls ( 0.1427, 0.2110) and ( 0.1597, 0.2672) .. ( 0.0950, 0.2671)
2641 --cycle
2642 (-0.0988, 0.2609)
2643 .. controls (-0.1426, 0.2672) and (-0.2761, 0.1879) .. (-0.1828, 0.1551)
2644 -- (-0.1743, 0.1972)
2645 -- (-0.1240, 0.1804)

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2646 -- (-0.0904, 0.2308)
2647 -- (-0.1071, 0.1720)
2648 .. controls (-0.0221, 0.1543) and (-0.0435, 0.2528) .. (-0.0988, 0.2609)
2649 --cycle
2650 (-0.8142, 0.2071)
2651 .. controls (-0.8258, 0.2070) and (-0.8375, 0.2012) .. (-0.8466, 0.1869)
2652 .. controls (-0.8534, 0.1760) and (-0.8533, 0.1669) .. (-0.8551, 0.1551)
2653 -- (-0.7963, 0.1636)
2654 -- (-0.8132, 0.1215)
2655 .. controls (-0.8020, 0.1234) and (-0.7923, 0.1232) .. (-0.7821, 0.1301)
2656 .. controls (-0.7447, 0.1557) and (-0.7793, 0.2072) .. (-0.8142, 0.2071)
2657 --cycle
2658 (-0.2584, 0.2056)
2659 -- (-0.2584, 0.1636)
2660 .. controls (-0.2445, 0.1848) and (-0.2445, 0.1843) .. (-0.2584, 0.2056)
2661 --cycle
2662 (-0.7132, 0.1953)
2663 .. controls (-0.7373, 0.1910) and (-0.7568, 0.1647) .. (-0.7459, 0.1215)
2664 -- (-0.6955, 0.1551)
2665 .. controls (-0.7015, 0.1043) and (-0.7057, 0.0835) .. (-0.6450, 0.0963)
2666 -- (-0.6535, 0.0711)
2667 .. controls (-0.5898, 0.0580) and (-0.5907, 0.1071) .. (-0.6081, 0.1249)
2668 .. controls (-0.6203, 0.1374) and (-0.6375, 0.1370) .. (-0.6535, 0.1383)
2669 .. controls (-0.6607, 0.1823) and (-0.6892, 0.1997) .. (-0.7132, 0.1953)
2670 --cycle
2671 (-0.4097, 0.1720)
2672 -- (-0.3845, 0.1215)
2673 -- (-0.4097, 0.0963)
2674 -- (-0.4349, 0.1047)
2675 .. controls (-0.4598,-0.0134) and (-0.2772, 0.1076) .. (-0.3690, 0.1621)
2676 .. controls (-0.3821, 0.1699) and (-0.3951, 0.1703) .. (-0.4097, 0.1720)
2677 --cycle
2678 ( 0.4374, 0.1711)
2679 .. controls ( 0.4200, 0.1682) and ( 0.4016, 0.1543) .. ( 0.3888, 0.1299)
2680 -- ( 0.4477, 0.1299)
2681 .. controls ( 0.4703, 0.1056) and ( 0.4891, 0.1252) .. ( 0.4798, 0.1463)
2682 .. controls ( 0.4711, 0.1661) and ( 0.4548, 0.1741) .. ( 0.4374, 0.1711)
2683 --cycle
2684 (-0.4594, 0.1707)
2685 .. controls (-0.4648, 0.1719) and (-0.4705, 0.1718) .. (-0.4752, 0.1698)
2686 .. controls (-0.4878, 0.1646) and (-0.4954, 0.1508) .. (-0.4982, 0.1382)
2687 .. controls (-0.5096, 0.0875) and (-0.4448, 0.0609) .. (-0.4602, 0.1299)
2688 .. controls (-0.4304, 0.1504) and (-0.4433, 0.1669) .. (-0.4594, 0.1707)
2689 --cycle
2690 (-0.0230, 0.1592)
2691 .. controls (-0.0727, 0.1609) and (-0.0799, 0.1002) .. (-0.1492, 0.0795)
2692 -- (-0.1576, 0.0374)
2693 .. controls (-0.1940, 0.0779) and (-0.1965, 0.0894) .. (-0.2500, 0.0711)
2694 -- (-0.2584, 0.0795)
2695 -- (-0.2332, 0.1383)
2696 .. controls (-0.2779, 0.1347) and (-0.3158, 0.0997) .. (-0.2855, 0.0563)
2697 .. controls (-0.2695, 0.0332) and (-0.2481, 0.0337) .. (-0.2256, 0.0248)
2698 .. controls (-0.1803, 0.0069) and (-0.1541,-0.0311) .. (-0.1155, 0.0290)

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2699 .. controls (-0.0607, 0.0067) and (-0.0553,-0.0150) .. (-0.0307,-0.0232)
2700 .. controls ( 0.0157,-0.0389) and ( 0.0524, 0.0035) .. ( 0.0442, 0.0543)
2701 .. controls ( 0.0843, 0.0613) and ( 0.1010, 0.0937) .. ( 0.0727, 0.1263)
2702 .. controls ( 0.0598, 0.1414) and (-0.0030, 0.1586) .. (-0.0230, 0.1592)
2703 --cycle
2704 (-0.0230, 0.1215)
2705 -- ( 0.0442, 0.1131)
2706 .. controls ( 0.0289, 0.0705) and ( 0.0228, 0.0356) .. (-0.0230, 0.0207)
2707 .. controls (-0.0339, 0.0543) and (-0.0383, 0.0572) .. (-0.0735, 0.0543)
2708 -- (-0.0819, 0.0627)
2709 --cycle
2710 (-0.8973, 0.1131)
2711 .. controls (-0.9051, 0.0492) and (-0.8679, 0.0676) .. (-0.8321, 0.0457)
2712 .. controls (-0.7996, 0.0258) and (-0.7906,-0.0272) .. (-0.7039,-0.0046)
2713 .. controls (-0.6977,-0.0167) and (-0.6964,-0.0237) .. (-0.6846,-0.0331)
2714 .. controls (-0.6146,-0.0891) and (-0.5741, 0.0485) .. (-0.6619, 0.0396)
2715 .. controls (-0.6723, 0.0384) and (-0.6856, 0.0326) .. (-0.6955, 0.0290)
2716 .. controls (-0.7145, 0.0487) and (-0.7442, 0.0435) .. (-0.7712, 0.0459)
2717 -- (-0.7771, 0.0746)
2718 --cycle
2719 ( 0.7839, 0.0627)
2720 .. controls ( 0.7798, 0.0513) and ( 0.7748, 0.0421) .. ( 0.7752, 0.0292)
2721 .. controls ( 0.7776,-0.0409) and ( 0.8888, 0.0073) .. ( 0.8169, 0.0493)
2722 .. controls ( 0.8064, 0.0555) and ( 0.7952, 0.0587) .. ( 0.7839, 0.0627)
2723 --cycle
2724 ( 0.6399, 0.0543)
2725 .. controls ( 0.6341, 0.0555) and ( 0.6275, 0.0553) .. ( 0.6207, 0.0536)
2726 .. controls ( 0.5899, 0.0092) and ( 0.6489,-0.0145) .. ( 0.6606, 0.0149)
2727 .. controls ( 0.6690, 0.0359) and ( 0.6576, 0.0510) .. ( 0.6399, 0.0543)
2728 --cycle
2729 ( 0.2228, 0.0528)
2730 .. controls ( 0.1887, 0.0319) and ( 0.2131,-0.0076) .. ( 0.2361,-0.0078)
2731 .. controls ( 0.2619,-0.0080) and ( 0.2726, 0.0432) .. ( 0.2228, 0.0528)
2732 --cycle
2733 ( 0.4509, 0.0479)
2734 .. controls ( 0.4394, 0.0460) and ( 0.4290, 0.0332) .. ( 0.4224, 0.0038)
2735 .. controls ( 0.3826, 0.0304) and ( 0.3797, 0.0371) .. ( 0.3300, 0.0301)
2736 .. controls ( 0.3175, 0.0283) and ( 0.3021, 0.0266) .. ( 0.2915, 0.0192)
2737 .. controls ( 0.2691, 0.0036) and ( 0.2444,-0.0690) .. ( 0.3552,-0.0718)
2738 -- ( 0.3131,-0.0046)
2739 .. controls ( 0.3436,-0.0165) and ( 0.3418,-0.0171) .. ( 0.3719,-0.0046)
2740 .. controls ( 0.3961,-0.0513) and ( 0.4113,-0.0431) .. ( 0.4560,-0.0298)
2741 -- ( 0.4560, 0.0038)
2742 -- ( 0.4812,-0.0466)
2743 .. controls ( 0.4281,-0.0863) and ( 0.4953,-0.1091) .. ( 0.5137,-0.0706)
2744 .. controls ( 0.5296,-0.0376) and ( 0.4853, 0.0538) .. ( 0.4509, 0.0479)
2745 --cycle
2746 (-0.9381, 0.0440)
2747 .. controls (-0.9573, 0.0465) and (-0.9752, 0.0361) .. (-0.9800, 0.0016)
2748 -- (-0.9774,-0.0032)
2749 -- (-0.9308, 0.0123)
2750 .. controls (-0.9260, 0.0012) and (-0.9218,-0.0135) .. (-0.9103,-0.0200)
2751 .. controls (-0.8939,-0.0290) and (-0.8783,-0.0112) .. (-0.8895, 0.0115)

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2752 .. controls (-0.8962, 0.0252) and (-0.9176, 0.0414) .. (-0.9381, 0.0440)
2753 --cycle
2754 ( 0.9435, 0.0207)
2755 -- ( 0.9184, 0.0123)
2756 -- ( 0.9435,-0.0046)
2757 --cycle
2758 ( 0.8999,-0.0129)
2759 .. controls ( 0.9000,-0.0216) and ( 0.8974,-0.0282) .. ( 0.8999,-0.0376)
2760 .. controls ( 0.9043,-0.0955) and ( 0.9800,-0.0453) .. ( 0.9254,-0.0191)
2761 .. controls ( 0.9173,-0.0151) and ( 0.9098,-0.0148) .. ( 0.8999,-0.0129)
2762 --cycle
2763 (-0.5187,-0.0249)
2764 .. controls (-0.5448,-0.0284) and (-0.5586,-0.0592) .. (-0.5611,-0.0886)
2765 -- (-0.5022,-0.0718)
2766 .. controls (-0.5038,-0.1199) and (-0.4832,-0.1244) .. (-0.4434,-0.1054)
2767 -- (-0.4349,-0.1139)
2768 -- (-0.5106,-0.1811)
2769 -- (-0.5442,-0.1475)
2770 -- (-0.5274,-0.1139)
2771 .. controls (-0.5482,-0.1103) and (-0.5717,-0.1068) .. (-0.5806,-0.1326)
2772 .. controls (-0.5943,-0.1714) and (-0.5235,-0.2179) .. (-0.5014,-0.2194)
2773 .. controls (-0.4612,-0.2223) and (-0.4187,-0.1658) .. (-0.4108,-0.1306)
2774 .. controls (-0.4075,-0.1185) and (-0.4054,-0.1026) .. (-0.4108,-0.0911)
2775 .. controls (-0.4193,-0.0753) and (-0.4422,-0.0688) .. (-0.4571,-0.0576)
2776 -- (-0.4884,-0.0315)
2777 .. controls (-0.4999,-0.0256) and (-0.5100,-0.0237) .. (-0.5187,-0.0249)
2778 --cycle
2779 ( 0.2098,-0.0382)
2780 .. controls ( 0.1959,-0.0434) and ( 0.1851,-0.0663) .. ( 0.1925,-0.0882)
2781 .. controls ( 0.2035,-0.1206) and ( 0.2830,-0.1639) .. ( 0.2964,-0.0882)
2782 .. controls ( 0.2773,-0.0896) and ( 0.2586,-0.0934) .. ( 0.2447,-0.0768)
2783 .. controls ( 0.2363,-0.0666) and ( 0.2352,-0.0463) .. ( 0.2242,-0.0396)
2784 .. controls ( 0.2194,-0.0367) and ( 0.2145,-0.0365) .. ( 0.2098,-0.0382)
2785 --cycle
2786 (-0.2960,-0.0452)
2787 .. controls (-0.3231,-0.0465) and (-0.3530,-0.0602) .. (-0.3592,-0.0683)
2788 .. controls (-0.3758,-0.0903) and (-0.3560,-0.1221) .. (-0.3845,-0.1979)
2789 -- (-0.4013,-0.1727)
2790 -- (-0.4182,-0.1727)
2791 .. controls (-0.4336,-0.2291) and (-0.4124,-0.2782) .. (-0.3803,-0.2577)
2792 .. controls (-0.3601,-0.2446) and (-0.3538,-0.2099) .. (-0.3392,-0.1970)
2793 .. controls (-0.3137,-0.1743) and (-0.2596,-0.2064) .. (-0.2752,-0.1306)
2794 -- (-0.3257,-0.1558)
2795 -- (-0.3341,-0.1475)
2796 -- (-0.3341,-0.0970)
2797 -- (-0.2500,-0.0970)
2798 .. controls (-0.2447,-0.0551) and (-0.2689,-0.0439) .. (-0.2960,-0.0452)
2799 --cycle
2800 ( 0.6563,-0.0662)
2801 .. controls ( 0.6458,-0.0662) and ( 0.6374,-0.0668) .. ( 0.6332,-0.0685)
2802 .. controls ( 0.5970,-0.0835) and ( 0.6057,-0.1189) .. ( 0.6332,-0.1391)
2803 -- ( 0.6493,-0.0970)
2804 -- ( 0.6662,-0.0970)

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2805 .. controls ( 0.6850,-0.1248) and ( 0.6940,-0.1204) .. ( 0.7250,-0.1139)
2806 -- ( 0.7081,-0.1475)
2807 .. controls ( 0.7837,-0.1829) and ( 0.7876,-0.1033) .. ( 0.7490,-0.0804)
2808 .. controls ( 0.7374,-0.0735) and ( 0.6877,-0.0664) .. ( 0.6563,-0.0662)
2809 --cycle
2810 ( 0.7081,-0.1475)
2811 .. controls ( 0.6742,-0.1429) and ( 0.6720,-0.1483) .. ( 0.6662,-0.1811)
2812 .. controls ( 0.6162,-0.1289) and ( 0.6115,-0.1833) .. ( 0.6244,-0.2044)
2813 .. controls ( 0.6426,-0.2346) and ( 0.6823,-0.2320) .. ( 0.7016,-0.2044)
2814 .. controls ( 0.7147,-0.1858) and ( 0.7107,-0.1681) .. ( 0.7081,-0.1475)
2815 --cycle
2816 ( 0.0544,-0.0769)
2817 .. controls ( 0.0466,-0.0773) and ( 0.0382,-0.0797) .. ( 0.0297,-0.0845)
2818 -- (-0.0147,-0.1139)
2819 .. controls (-0.0057,-0.1396) and (-0.0069,-0.1385) .. ( 0.0189,-0.1475)
2820 .. controls (-0.0074,-0.2147) and ( 0.0346,-0.2081) .. ( 0.0553,-0.1870)
2821 .. controls ( 0.0667,-0.1752) and ( 0.0961,-0.1299) .. ( 0.0958,-0.1139)
2822 .. controls ( 0.0955,-0.0925) and ( 0.0776,-0.0759) .. ( 0.0544,-0.0769)
2823 --cycle
2824 ( 0.3572,-0.0881)
2825 .. controls ( 0.3447,-0.0867) and ( 0.3392,-0.1053) .. ( 0.3450,-0.1208)
2826 .. controls ( 0.3587,-0.1579) and ( 0.4169,-0.1493) .. ( 0.4239,-0.1208)
2827 .. controls ( 0.4287,-0.1010) and ( 0.4113,-0.0745) .. ( 0.3888,-0.0970)
2828 -- ( 0.3719,-0.0970)
2829 .. controls ( 0.3663,-0.0912) and ( 0.3613,-0.0886) .. ( 0.3572,-0.0881)
2830 --cycle
2831 ( 0.7250,-0.1054)
2832 -- ( 0.7333,-0.1054)
2833 -- ( 0.7333,-0.1139)
2834 --cycle
2835 (-0.7357,-0.1221)
2836 .. controls (-0.7405,-0.1203) and (-0.7472,-0.1201) .. (-0.7562,-0.1227)
2837 .. controls (-0.7721,-0.1527) and (-0.7463,-0.1606) .. (-0.7339,-0.1532)
2838 .. controls (-0.7244,-0.1475) and (-0.7214,-0.1275) .. (-0.7357,-0.1221)
2839 --cycle
2840 (-0.8606,-0.1378)
2841 .. controls (-0.8718,-0.1386) and (-0.8832,-0.1446) .. (-0.8941,-0.1518)
2842 -- (-0.8728,-0.1897)
2843 -- (-0.8468,-0.1811)
2844 -- (-0.8613,-0.2102)
2845 -- (-0.8317,-0.2631)
2846 .. controls (-0.7953,-0.2270) and (-0.7967,-0.1536) .. (-0.8471,-0.1391)
2847 .. controls (-0.8514,-0.1378) and (-0.8560,-0.1374) .. (-0.8606,-0.1378)
2848 --cycle
2849 ( 0.9187,-0.1555)
2850 .. controls ( 0.9083,-0.1585) and ( 0.8971,-0.1627) .. ( 0.8847,-0.1675)
2851 .. controls ( 0.8669,-0.1743) and ( 0.8469,-0.1785) .. ( 0.8399,-0.1989)
2852 .. controls ( 0.8307,-0.2247) and ( 0.8481,-0.2329) .. ( 0.8679,-0.2399)
2853 -- ( 0.8847,-0.2063)
2854 .. controls ( 0.8863,-0.2068) and ( 0.8871,-0.2069) .. ( 0.8886,-0.2074)
2855 --cycle
2856 ( 0.8679,-0.2399)
2857 .. controls ( 0.8663,-0.2432) and ( 0.8651,-0.2468) .. ( 0.8637,-0.2502)

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2858 -- ( 0.8693,-0.2405)
2859 .. controls ( 0.8687,-0.2402) and ( 0.8685,-0.2401) .. ( 0.8679,-0.2399)
2860 --cycle
2861 ( 0.4392,-0.1558)
2862 -- ( 0.4332,-0.1807)
2863 .. controls ( 0.4281,-0.2431) and ( 0.5089,-0.2120) .. ( 0.4618,-0.1688)
2864 .. controls ( 0.4519,-0.1597) and ( 0.4457,-0.1593) .. ( 0.4392,-0.1558)
2865 --cycle
2866 (-0.6846,-0.1952)
2867 .. controls (-0.6966,-0.1951) and (-0.7082,-0.2013) .. (-0.7157,-0.2171)
2868 .. controls (-0.7203,-0.2268) and (-0.7199,-0.2378) .. (-0.7207,-0.2483)
2869 -- (-0.6787,-0.2399)
2870 -- (-0.6703,-0.2735)
2871 .. controls (-0.6096,-0.2523) and (-0.6488,-0.1955) .. (-0.6846,-0.1952)
2872 --cycle
2873 (-0.1120,-0.2035)
2874 .. controls (-0.1188,-0.2048) and (-0.1255,-0.2071) .. (-0.1323,-0.2089)
2875 .. controls (-0.1785,-0.2217) and (-0.2021,-0.2285) .. (-0.1912,-0.2819)
2876 -- (-0.0988,-0.2483)
2877 -- (-0.0651,-0.2740)
2878 .. controls (-0.0333,-0.3228) and (-0.0165,-0.2917) .. (-0.0209,-0.2740)
2879 .. controls (-0.0243,-0.2616) and (-0.0384,-0.2481) .. (-0.0474,-0.2386)
2880 .. controls (-0.0590,-0.2264) and (-0.0744,-0.2085) .. (-0.0911,-0.2040)
2881 .. controls (-0.0982,-0.2021) and (-0.1052,-0.2023) .. (-0.1120,-0.2035)
2882 --cycle
2883 ( 0.1647,-0.2053)
2884 .. controls ( 0.1471,-0.2058) and ( 0.1297,-0.2092) .. ( 0.1164,-0.2148)
2885 .. controls ( 0.0833,-0.2632) and ( 0.1207,-0.3872) .. ( 0.1933,-0.3346)
2886 .. controls ( 0.2031,-0.3275) and ( 0.2109,-0.3165) .. ( 0.2178,-0.3068)
2887 .. controls ( 0.2722,-0.2297) and ( 0.2177,-0.2039) .. ( 0.1647,-0.2053)
2888 --cycle
2889 ( 0.3262,-0.2328)
2890 .. controls ( 0.3073,-0.2617) and ( 0.3314,-0.2707) .. ( 0.3420,-0.2638)
2891 .. controls ( 0.3522,-0.2572) and ( 0.3585,-0.2285) .. ( 0.3262,-0.2328)
2892 --cycle
2893 ( 0.1534,-0.2399)
2894 -- ( 0.2039,-0.2483)
2895 -- ( 0.1534,-0.2987)
2896 --cycle
2897 ( 0.5217,-0.2636)
2898 .. controls ( 0.5071,-0.2632) and ( 0.4918,-0.2708) .. ( 0.4798,-0.2909)
2899 .. controls ( 0.4713,-0.3051) and ( 0.4736,-0.3094) .. ( 0.4728,-0.3240)
2900 -- ( 0.4812,-0.3240)
2901 -- ( 0.4812,-0.3324)
2902 -- ( 0.5232,-0.2987)
2903 -- ( 0.5232,-0.3492)
2904 .. controls ( 0.6028,-0.3358) and ( 0.5655,-0.2645) .. ( 0.5217,-0.2636)
2905 --cycle
2906 ( 0.4812,-0.3324)
2907 -- ( 0.4728,-0.3240)
2908 .. controls ( 0.4525,-0.3209) and ( 0.4056,-0.3074) .. ( 0.3892,-0.3106)
2909 .. controls ( 0.3596,-0.3163) and ( 0.3503,-0.3437) .. ( 0.3892,-0.3660)
2910 -- ( 0.3972,-0.3407)

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2911 .. controls ( 0.4281,-0.3611) and ( 0.4279,-0.3612) .. ( 0.4644,-0.3576)
2912 -- ( 0.4560,-0.4080)
2913 .. controls ( 0.5104,-0.3986) and ( 0.5053,-0.3736) .. ( 0.4812,-0.3324)
2914 --cycle
2915 ( 0.7282,-0.2775)
2916 .. controls ( 0.7176,-0.2768) and ( 0.7066,-0.2782) .. ( 0.6965,-0.2822)
2917 .. controls ( 0.6458,-0.3532) and ( 0.7574,-0.3899) .. ( 0.7782,-0.3306)
2918 .. controls ( 0.7887,-0.3013) and ( 0.7602,-0.2797) .. ( 0.7282,-0.2775)
2919 --cycle
2920 (-0.2465,-0.2903)
2921 .. controls (-0.2987,-0.3042) and (-0.2344,-0.4071) .. (-0.2306,-0.4102)
2922 .. controls (-0.1938,-0.4396) and (-0.1663,-0.4010) .. (-0.1299,-0.4027)
2923 .. controls (-0.1140,-0.4034) and (-0.0666,-0.4182) .. (-0.0557,-0.3820)
2924 .. controls (-0.0504,-0.3644) and (-0.0676,-0.3334) .. (-0.0988,-0.3744)
2925 -- (-0.1181,-0.3407)
2926 -- (-0.1308,-0.3168)
2927 .. controls (-0.1675,-0.2582) and (-0.1759,-0.3435) .. (-0.1781,-0.3492)
2928 .. controls (-0.1841,-0.3653) and (-0.1898,-0.3700) .. (-0.1996,-0.3828)
2929 -- (-0.2164,-0.2903)
2930 .. controls (-0.2291,-0.2881) and (-0.2389,-0.2883) .. (-0.2465,-0.2903)
2931 --cycle
2932 (-0.5947,-0.3156)
2933 -- (-0.6030,-0.3407)
2934 -- (-0.5778,-0.3240)
2935 --cycle
2936 (-0.0014,-0.3194)
2937 .. controls (-0.0278,-0.3131) and (-0.0544,-0.3497) .. (-0.0058,-0.3694)
2938 .. controls ( 0.0049,-0.3738) and ( 0.0162,-0.3735) .. ( 0.0273,-0.3744)
2939 .. controls ( 0.0265,-0.3636) and ( 0.0269,-0.3522) .. ( 0.0223,-0.3420)
2940 .. controls ( 0.0163,-0.3283) and ( 0.0074,-0.3214) .. (-0.0014,-0.3194)
2941 --cycle
2942 (-0.6508,-0.3284)
2943 .. controls (-0.6656,-0.3290) and (-0.6816,-0.3373) .. (-0.6955,-0.3576)
2944 .. controls (-0.7159,-0.3441) and (-0.7363,-0.3292) .. (-0.7624,-0.3378)
2945 .. controls (-0.7705,-0.3405) and (-0.7771,-0.3450) .. (-0.7829,-0.3501)
2946 -- (-0.7599,-0.3912)
2947 -- (-0.7543,-0.3744)
2948 -- (-0.6619,-0.4164)
2949 -- (-0.6619,-0.3660)
2950 -- (-0.6367,-0.4164)
2951 .. controls (-0.5723,-0.3945) and (-0.6064,-0.3266) .. (-0.6508,-0.3284)
2952 --cycle
2953 (-0.5287,-0.3512)
2954 .. controls (-0.5489,-0.3498) and (-0.5690,-0.3591) .. (-0.5764,-0.3751)
2955 .. controls (-0.5966,-0.4192) and (-0.5398,-0.3912) .. (-0.5274,-0.3828)
2956 -- (-0.5190,-0.4500)
2957 -- (-0.5358,-0.4333)
2958 -- (-0.5358,-0.4248)
2959 -- (-0.5611,-0.4248)
2960 .. controls (-0.5664,-0.4641) and (-0.5605,-0.4735) .. (-0.5442,-0.5088)
2961 -- (-0.5274,-0.5088)
2962 .. controls (-0.4972,-0.4701) and (-0.4647,-0.4466) .. (-0.4806,-0.3915)
2963 .. controls (-0.4882,-0.3649) and (-0.5085,-0.3527) .. (-0.5287,-0.3512)

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2964 --cycle
2965 ( 0.5485,-0.3594)
2966 .. controls ( 0.5504,-0.3686) and ( 0.5513,-0.3797) .. ( 0.5560,-0.3899)
2967 .. controls ( 0.5831,-0.4490) and ( 0.6446,-0.3809) .. ( 0.5811,-0.3594)
2968 .. controls ( 0.5706,-0.3579) and ( 0.5594,-0.3583) .. ( 0.5485,-0.3594)
2969 --cycle
2970 ( 0.3311,-0.3646)
2971 .. controls ( 0.3201,-0.3659) and ( 0.3103,-0.3791) .. ( 0.3084,-0.3917)
2972 .. controls ( 0.3035,-0.4255) and ( 0.3481,-0.5315) .. ( 0.4140,-0.4669)
2973 .. controls ( 0.4439,-0.4932) and ( 0.4962,-0.5278) .. ( 0.5388,-0.5107)
2974 .. controls ( 0.5684,-0.4989) and ( 0.5806,-0.4516) .. ( 0.5232,-0.4333)
2975 -- ( 0.5232,-0.4669)
2976 .. controls ( 0.4932,-0.4550) and ( 0.4949,-0.4563) .. ( 0.4644,-0.4669)
2977 -- ( 0.4560,-0.4248)
2978 -- ( 0.4224,-0.4417)
2979 -- ( 0.3888,-0.4080)
2980 -- ( 0.3617,-0.4500)
2981 -- ( 0.3617,-0.4080)
2982 .. controls ( 0.3546,-0.3735) and ( 0.3422,-0.3632) .. ( 0.3311,-0.3646)
2983 --cycle
2984 ( 0.0862,-0.3828)
2985 .. controls ( 0.0086,-0.4104) and ( 0.1258,-0.4856) .. ( 0.1453,-0.4236)
2986 .. controls ( 0.1495,-0.4116) and ( 0.1465,-0.4028) .. ( 0.1453,-0.3912)
2987 -- ( 0.0946,-0.4080)
2988 --cycle
2989 (-0.3761,-0.4056)
2990 .. controls (-0.4460,-0.4310) and (-0.4022,-0.4833) .. (-0.3686,-0.4756)
2991 .. controls (-0.3385,-0.4686) and (-0.3150,-0.4102) .. (-0.3761,-0.4056)
2992 --cycle
2993 (-0.1407,-0.4164)
2994 .. controls (-0.1510,-0.4360) and (-0.1606,-0.4518) .. (-0.1524,-0.4748)
2995 .. controls (-0.1401,-0.5093) and (-0.0958,-0.5218) .. (-0.0687,-0.4961)
2996 .. controls (-0.0363,-0.4652) and (-0.0685,-0.4086) .. (-0.0988,-0.4753)
2997 --cycle
2998 (-0.7345,-0.4223)
2999 .. controls (-0.7375,-0.4223) and (-0.7393,-0.4233) .. (-0.7417,-0.4237)
3000 -- (-0.7259,-0.4519)
3001 -- (-0.7123,-0.4248)
3002 .. controls (-0.7212,-0.4230) and (-0.7284,-0.4222) .. (-0.7345,-0.4223)
3003 --cycle
3004 (-0.6450,-0.4333)
3005 -- (-0.6283,-0.4753)
3006 -- (-0.6959,-0.5053)
3007 -- (-0.6728,-0.5467)
3008 .. controls (-0.6597,-0.5415) and (-0.6464,-0.5310) .. (-0.6353,-0.5238)
3009 .. controls (-0.6229,-0.5161) and (-0.6029,-0.5082) .. (-0.5949,-0.4962)
3010 .. controls (-0.5673,-0.4552) and (-0.6118,-0.4359) .. (-0.6450,-0.4333)
3011 --cycle
3012 ( 0.7515,-0.4421)
3013 .. controls ( 0.7404,-0.4518) and ( 0.7330,-0.4660) .. ( 0.7289,-0.4814)
3014 -- ( 0.7518,-0.4421)
3015 .. controls ( 0.7518,-0.4422) and ( 0.7516,-0.4421) .. ( 0.7515,-0.4421)
3016 --cycle

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3017 (-0.7203,-0.4618)
3018 -- (-0.7004,-0.4973)
3019 .. controls (-0.6944,-0.4774) and (-0.6993,-0.4695) .. (-0.7203,-0.4618)
3020 --cycle
3021 ( 0.1694,-0.4873)
3022 .. controls ( 0.1182,-0.4851) and ( 0.0606,-0.5165) .. ( 0.1114,-0.5509)
3023 .. controls ( 0.1043,-0.5681) and ( 0.0968,-0.5809) .. ( 0.1030,-0.6004)
3024 .. controls ( 0.1160,-0.6424) and ( 0.2092,-0.6560) .. ( 0.1955,-0.5761)
3025 -- ( 0.1450,-0.6013)
3026 -- ( 0.1199,-0.5425)
3027 -- ( 0.1282,-0.5341)
3028 .. controls ( 0.1602,-0.5459) and ( 0.1584,-0.5438) .. ( 0.1871,-0.5257)
3029 .. controls ( 0.1977,-0.5856) and ( 0.2311,-0.5564) .. ( 0.2301,-0.5337)
3030 .. controls ( 0.2287,-0.5019) and ( 0.2002,-0.4885) .. ( 0.1694,-0.4873)
3031 --cycle
3032 ( 0.3143,-0.5168)
3033 .. controls ( 0.2653,-0.5233) and ( 0.3123,-0.5809) .. ( 0.3334,-0.5398)
3034 .. controls ( 0.3375,-0.5319) and ( 0.3370,-0.5251) .. ( 0.3384,-0.5168)
3035 --cycle
3036 ( 0.5821,-0.5172)
3037 -- ( 0.5905,-0.5425)
3038 .. controls ( 0.5223,-0.5546) and ( 0.5461,-0.6299) .. ( 0.5965,-0.6187)
3039 .. controls ( 0.6116,-0.6153) and ( 0.6642,-0.5952) .. ( 0.6693,-0.5808)
3040 .. controls ( 0.6859,-0.5354) and ( 0.6147,-0.5138) .. ( 0.5821,-0.5172)
3041 --cycle
3042 (-0.2667,-0.5315)
3043 .. controls (-0.3091,-0.5364) and (-0.3818,-0.5868) .. (-0.3173,-0.6098)
3044 .. controls (-0.3409,-0.7049) and (-0.2257,-0.7182) .. (-0.2332,-0.6265)
3045 -- (-0.2752,-0.6434)
3046 -- (-0.3173,-0.6013)
3047 .. controls (-0.2964,-0.5962) and (-0.2716,-0.5851) .. (-0.2511,-0.5945)
3048 .. controls (-0.2356,-0.6015) and (-0.2239,-0.6203) .. (-0.2131,-0.6252)
3049 .. controls (-0.1929,-0.6345) and (-0.1822,-0.6134) .. (-0.1883,-0.5942)
3050 .. controls (-0.1944,-0.5749) and (-0.2315,-0.5384) .. (-0.2508,-0.5323)
3051 .. controls (-0.2552,-0.5310) and (-0.2606,-0.5308) .. (-0.2667,-0.5315)
3052 --cycle
3053 ( 0.5989,-0.5509)
3054 -- ( 0.6073,-0.5509)
3055 -- ( 0.6073,-0.5593)
3056 --cycle
3057 (-0.0485,-0.5624)
3058 .. controls (-0.0662,-0.5623) and (-0.0842,-0.5741) .. (-0.0904,-0.6098)
3059 -- (-0.0483,-0.6013)
3060 .. controls (-0.0229,-0.6296) and ( 0.0007,-0.6067) .. (-0.0083,-0.5860)
3061 .. controls (-0.0134,-0.5744) and (-0.0308,-0.5625) .. (-0.0485,-0.5624)
3062 --cycle
3063 (-0.4918,-0.5707)
3064 .. controls (-0.5107,-0.5708) and (-0.5309,-0.5802) .. (-0.5442,-0.6013)
3065 -- (-0.5778,-0.5846)
3066 -- (-0.5862,-0.6181)
3067 .. controls (-0.5249,-0.6353) and (-0.5439,-0.6523) .. (-0.4854,-0.6098)
3068 -- (-0.4937,-0.6770)
3069 -- (-0.5442,-0.6854)

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3070 -- (-0.5442,-0.7022)
3071 .. controls (-0.4313,-0.7520) and (-0.4409,-0.6069) .. (-0.4465,-0.5962)
3072 .. controls (-0.4550,-0.5800) and (-0.4728,-0.5707) .. (-0.4918,-0.5707)
3073 --cycle
3074 ( 0.3300,-0.5846)
3075 -- ( 0.3300,-0.6098)
3076 -- ( 0.3552,-0.6098)
3077 -- ( 0.3552,-0.5846)
3078 --cycle
3079 ( 0.3726,-0.6221)
3080 .. controls ( 0.2948,-0.6226) and ( 0.2995,-0.7351) .. ( 0.3726,-0.7632)
3081 .. controls ( 0.4265,-0.7841) and ( 0.4818,-0.7181) .. ( 0.4056,-0.6938)
3082 -- ( 0.3719,-0.7275)
3083 -- ( 0.3719,-0.7027)
3084 .. controls ( 0.3796,-0.6524) and ( 0.4200,-0.6879) .. ( 0.4450,-0.6792)
3085 .. controls ( 0.4638,-0.6728) and ( 0.4659,-0.6470) .. ( 0.4510,-0.6352)
3086 .. controls ( 0.4434,-0.6293) and ( 0.3843,-0.6220) .. ( 0.3726,-0.6221)
3087 --cycle
3088 ( 0.0022,-0.6349)
3089 -- ( 0.0189,-0.6686)
3090 -- ( 0.0189,-0.6349)
3091 --cycle
3092 (-0.1244,-0.6794)
3093 .. controls (-0.1314,-0.6810) and (-0.1382,-0.6846) .. (-0.1441,-0.6904)
3094 .. controls (-0.1605,-0.7066) and (-0.1526,-0.7279) .. (-0.1607,-0.7464)
3095 -- (-0.1786,-0.7721)
3096 .. controls (-0.1852,-0.7840) and (-0.1929,-0.8079) .. (-0.1728,-0.8122)
3097 .. controls (-0.1636,-0.8142) and (-0.1224,-0.7844) .. (-0.1071,-0.7778)
3098 -- (-0.1155,-0.7106)
3099 -- (-0.0735,-0.7275)
3100 .. controls (-0.0800,-0.6898) and (-0.1033,-0.6748) .. (-0.1244,-0.6794)
3101 --cycle
3102 ( 0.1863,-0.6829)
3103 .. controls ( 0.1792,-0.6828) and ( 0.1712,-0.6837) .. ( 0.1618,-0.6854)
3104 -- ( 0.1618,-0.7022)
3105 -- ( 0.2123,-0.7442)
3106 -- ( 0.1282,-0.7190)
3107 .. controls ( 0.1336,-0.7372) and ( 0.1344,-0.7442) .. ( 0.1476,-0.7594)
3108 .. controls ( 0.1538,-0.7664) and ( 0.1626,-0.7738) .. ( 0.1704,-0.7788)
3109 .. controls ( 0.2127,-0.8054) and ( 0.2462,-0.7806) .. ( 0.2481,-0.7530)
3110 .. controls ( 0.2492,-0.7403) and ( 0.2417,-0.7279) .. ( 0.2353,-0.7175)
3111 .. controls ( 0.2199,-0.6926) and ( 0.2075,-0.6832) .. ( 0.1863,-0.6829)
3112 --cycle
3113 ( 0.5905,-0.6889)
3114 .. controls ( 0.5769,-0.6869) and ( 0.5692,-0.6908) .. ( 0.5569,-0.6938)
3115 -- ( 0.5569,-0.7106)
3116 -- ( 0.5821,-0.7190)
3117 .. controls ( 0.5823,-0.7234) and ( 0.5836,-0.7260) .. ( 0.5844,-0.7296)
3118 -- ( 0.6046,-0.6948)
3119 .. controls ( 0.6001,-0.6927) and ( 0.5958,-0.6898) .. ( 0.5905,-0.6889)
3120 --cycle
3121 (-0.0391,-0.7245)
3122 .. controls (-0.0667,-0.7229) and (-0.0839,-0.7453) .. (-0.0753,-0.7947)

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```

3123 .. controls (-0.0651,-0.8529) and (-0.0367,-0.8483) .. (-0.0106,-0.8698)
3124 -- ( 0.0547,-0.8704)
3125 .. controls ( 0.0548,-0.8616) and ( 0.0567,-0.8516) .. ( 0.0610,-0.8367)
3126 -- ( 0.0189,-0.8367)
3127 .. controls ( 0.0024,-0.8190) and ( 0.0000,-0.8231) .. (-0.0230,-0.8283)
3128 .. controls (-0.0380,-0.7923) and (-0.0454,-0.7840) .. (-0.0399,-0.7442)
3129 -- (-0.0230,-0.7442)
3130 -- (-0.0147,-0.7778)
3131 -- ( 0.0694,-0.7778)
3132 -- ( 0.0525,-0.8199)
3133 -- ( 0.1424,-0.8295)
3134 .. controls ( 0.1612,-0.8227) and ( 0.1619,-0.8006) .. ( 0.1424,-0.7877)
3135 .. controls ( 0.1265,-0.7801) and ( 0.1112,-0.7837) .. ( 0.0946,-0.7877)
3136 .. controls ( 0.0866,-0.7388) and ( 0.0598,-0.7228) .. ( 0.0189,-0.7526)
3137 .. controls (-0.0021,-0.7351) and (-0.0224,-0.7255) .. (-0.0391,-0.7245)
3138 --cycle
3139 (-0.5605,-0.7471)
3140 -- (-0.5242,-0.8116)
3141 .. controls (-0.5223,-0.8116) and (-0.5211,-0.8114) .. (-0.5190,-0.8115)
3142 -- (-0.5201,-0.8191)
3143 -- (-0.4998,-0.8552)
3144 .. controls (-0.4770,-0.8370) and (-0.4696,-0.8098) .. (-0.4974,-0.7815)
3145 --cycle
3146 (-0.3761,-0.7611)
3147 -- (-0.3845,-0.7694)
3148 -- (-0.3845,-0.7863)
3149 -- (-0.3761,-0.7947)
3150 -- (-0.3593,-0.7947)
3151 -- (-0.3508,-0.7863)
3152 -- (-0.3508,-0.7694)
3153 -- (-0.3593,-0.7611)
3154 --cycle
3155 ( 0.3384,-0.8347)
3156 .. controls ( 0.3106,-0.8395) and ( 0.2888,-0.8533) .. ( 0.2775,-0.8723)
3157 -- ( 0.3442,-0.8729)
3158 -- ( 0.3467,-0.8702)
3159 -- ( 0.3561,-0.8730)
3160 -- ( 0.4348,-0.8736)
3161 .. controls ( 0.4345,-0.8731) and ( 0.4345,-0.8727) .. ( 0.4341,-0.8721)
3162 .. controls ( 0.4186,-0.8512) and ( 0.3640,-0.8304) .. ( 0.3384,-0.8347)
3163 --cycle
3164 (-0.0904,-0.8535)
3165 .. controls (-0.1018,-0.8579) and (-0.1087,-0.8586) .. (-0.1185,-0.8680)
3166 .. controls (-0.1188,-0.8683) and (-0.1189,-0.8687) .. (-0.1192,-0.8690)
3167 -- (-0.0904,-0.8692)
3168 --cycle
3169 (-0.3081,-0.8645)
3170 .. controls (-0.3140,-0.8641) and (-0.3192,-0.8651) .. (-0.3238,-0.8672)
3171 -- (-0.2954,-0.8675)
3172 .. controls (-0.2996,-0.8660) and (-0.3039,-0.8648) .. (-0.3081,-0.8645)
3173 --cycle
3174 ;
3175 }

```

```
3176 }
3177 \fi
```

hex/terrain/woods

The style for woods. The pattern is filled with a darker green, and outlines are not drawn.

```
3178 \tikzset{
3179   hex/terrain/woods/.style={
3180     draw=none,
3181     fill={rgb,100:red,27;green,67;blue,27}
3182   }
3183 }
```

hex/terrain/woods

Regular woods.



```
3184 \ifhex@terrain@pic
3185 \tikzset{
3186   hex/terrain/woods/.pic={
3187     \path[hex/terrain/woods,pic actions,draw=none]
3188       (-0.2656, 0.8694)
3189       .. controls (-0.3133, 0.8640) and (-0.3608, 0.8400) .. (-0.3541, 0.8219)
3190       .. controls (-0.3417, 0.7629) and (-0.2512, 0.7779) .. (-0.2082, 0.7875)
3191       -- (-0.2424, 0.6937)
3192       .. controls (-0.2916, 0.7000) and (-0.3535, 0.6915) .. (-0.3950, 0.6606)
3193       .. controls (-0.4299, 0.6330) and (-0.4373, 0.5909) .. (-0.3950, 0.5657)
3194       .. controls (-0.4092, 0.5022) and (-0.3694, 0.4908) .. (-0.3191, 0.4633)
3195       .. controls (-0.3291, 0.3852) and (-0.2535, 0.3866) .. (-0.2935, 0.4633)
3196       .. controls (-0.2488, 0.4801) and (-0.2488, 0.5071) .. (-0.2778, 0.5156)
3197       .. controls (-0.2888, 0.5201) and (-0.3300, 0.5153) .. (-0.3447, 0.5156)
3198       -- (-0.3191, 0.6255)
3199       -- (-0.2680, 0.6425)
3200       -- (-0.2253, 0.5657)
3201       .. controls (-0.2136, 0.5780) and (-0.2023, 0.5853) .. (-0.2092, 0.6046)
3202       .. controls (-0.2132, 0.6161) and (-0.2403, 0.6366) .. (-0.2260, 0.6502)
3203       .. controls (-0.2044, 0.6711) and (-0.1779, 0.6203) .. (-0.1564, 0.6147)
3204       .. controls (-0.1363, 0.6094) and (-0.1262, 0.6240) .. (-0.1328, 0.6430)
3205       .. controls (-0.1449, 0.6778) and (-0.1661, 0.6737) .. (-0.1741, 0.7278)
3206       .. controls (-0.1213, 0.6943) and (-0.1063, 0.7287) .. (-0.1485, 0.7534)
3207       -- (-0.1058, 0.7875)
3208       -- (-0.0718, 0.7789)
3209       -- (-0.0633, 0.8046)
3210       .. controls (-0.0937, 0.8085) and (-0.0917, 0.8079) .. (-0.1143, 0.7875)
3211       -- (-0.1311, 0.8194)
3212       .. controls (-0.0764, 0.8223) and (-0.0450, 0.8485) .. (-0.0671, 0.8554)
```

```

3213 .. controls (-0.1156, 0.8701) and (-0.1015, 0.8233) .. (-0.1806, 0.8398)
3214 .. controls (-0.1900, 0.8580) and (-0.2089, 0.8664) .. (-0.2307, 0.8694)
3215 --cycle
3216 ( 0.3814, 0.8694)
3217 .. controls ( 0.3767, 0.8683) and ( 0.3712, 0.8666) .. ( 0.3632, 0.8643)
3218 -- ( 0.3974, 0.8387)
3219 .. controls ( 0.3974, 0.8591) and ( 0.3972, 0.8674) .. ( 0.3911, 0.8694)
3220 --cycle
3221 (-0.2452, 0.8541)
3222 .. controls (-0.2324, 0.8571) and (-0.2266, 0.8501) .. (-0.2079, 0.8422)
3223 -- (-0.2167, 0.8284)
3224 .. controls (-0.2397, 0.8309) and (-0.2848, 0.8202) .. (-0.2983, 0.8284)
3225 .. controls (-0.3215, 0.8378) and (-0.2860, 0.8342) .. (-0.2614, 0.8473)
3226 .. controls (-0.2547, 0.8509) and (-0.2496, 0.8531) .. (-0.2452, 0.8541)
3227 --cycle
3228 (-0.4331, 0.8427)
3229 .. controls (-0.4534, 0.8538) and (-0.5066, 0.7937) .. (-0.5170, 0.7773)
3230 .. controls (-0.5802, 0.6871) and (-0.6279, 0.5503) .. (-0.6704, 0.5650)
3231 .. controls (-0.6703, 0.5117) and (-0.7322, 0.4917) .. (-0.7340, 0.4547)
3232 .. controls (-0.7365, 0.4053) and (-0.6948, 0.3832) .. (-0.6621, 0.3593)
3233 .. controls (-0.6271, 0.3335) and (-0.6254, 0.2860) .. (-0.5409, 0.3014)
3234 -- (-0.5409, 0.3184)
3235 -- (-0.5750, 0.3099)
3236 -- (-0.5836, 0.3524)
3237 -- (-0.4898, 0.3184)
3238 -- (-0.5068, 0.3696)
3239 .. controls (-0.4593, 0.3586) and (-0.4552, 0.3659) .. (-0.4214, 0.3269)
3240 .. controls (-0.3754, 0.3528) and (-0.3794, 0.4022) .. (-0.4295, 0.4177)
3241 .. controls (-0.4450, 0.4224) and (-0.4931, 0.4354) .. (-0.5068, 0.4333)
3242 .. controls (-0.5383, 0.4284) and (-0.6200, 0.3557) .. (-0.6774, 0.4548)
3243 -- (-0.6432, 0.4548)
3244 -- (-0.6603, 0.4975)
3245 .. controls (-0.6019, 0.4851) and (-0.6021, 0.5053) .. (-0.5921, 0.5572)
3246 .. controls (-0.4969, 0.5307) and (-0.5431, 0.5224) .. (-0.4812, 0.4890)
3247 .. controls (-0.4749, 0.5293) and (-0.4896, 0.5637) .. (-0.5068, 0.5998)
3248 .. controls (-0.4948, 0.6064) and (-0.4850, 0.6107) .. (-0.4746, 0.6204)
3249 .. controls (-0.4177, 0.6740) and (-0.4877, 0.7151) .. (-0.5154, 0.6423)
3250 .. controls (-0.5225, 0.6240) and (-0.5189, 0.6174) .. (-0.5154, 0.5998)
3251 -- (-0.5889, 0.6190)
3252 .. controls (-0.5889, 0.6190) and (-0.5470, 0.6607) .. (-0.5396, 0.6879)
3253 .. controls (-0.5254, 0.7392) and (-0.4740, 0.7624) .. (-0.4378, 0.7960)
3254 .. controls (-0.4256, 0.8071) and (-0.3322, 0.7872) .. (-0.4331, 0.8427)
3255 --cycle
3256 ( 0.1374, 0.8418)
3257 .. controls ( 0.1320, 0.8428) and ( 0.1261, 0.8424) .. ( 0.1202, 0.8403)
3258 .. controls ( 0.1031, 0.8066) and ( 0.1641, 0.7460) .. ( 0.1812, 0.7545)
3259 .. controls ( 0.1999, 0.7639) and ( 0.1758, 0.8354) .. ( 0.1374, 0.8418)
3260 --cycle
3261 (-0.0462, 0.8217)
3262 -- (-0.0462, 0.7789)
3263 -- (-0.0121, 0.7961)
3264 --cycle
3265 ( 0.3717, 0.8217)

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3266 -- ( 0.3717, 0.8046)
3267 -- ( 0.4059, 0.7961)
3268 -- ( 0.4144, 0.8217)
3269 --cycle
3270 ( 0.4898, 0.8122)
3271 .. controls ( 0.4741, 0.8124) and ( 0.4748, 0.7893) .. ( 0.4981, 0.7754)
3272 .. controls ( 0.5017, 0.7550) and ( 0.5313, 0.6452) .. ( 0.5686, 0.6689)
3273 .. controls ( 0.5928, 0.6844) and ( 0.5339, 0.7103) .. ( 0.5653, 0.7412)
3274 .. controls ( 0.5710, 0.7471) and ( 0.5728, 0.7507) .. ( 0.5731, 0.7536)
3275 -- ( 0.5703, 0.7583)
3276 .. controls ( 0.5582, 0.7647) and ( 0.5121, 0.7531) .. ( 0.5343, 0.7796)
3277 .. controls ( 0.5145, 0.8036) and ( 0.4992, 0.8122) .. ( 0.4898, 0.8122)
3278 --cycle
3279 ( 0.3291, 0.7997)
3280 .. controls ( 0.3112, 0.7975) and ( 0.2934, 0.7843) .. ( 0.2780, 0.7757)
3281 .. controls ( 0.2235, 0.7455) and ( 0.1913, 0.7199) .. ( 0.2438, 0.6595)
3282 .. controls ( 0.2287, 0.6542) and ( 0.2176, 0.6521) .. ( 0.2063, 0.6389)
3283 .. controls ( 0.1704, 0.5968) and ( 0.2192, 0.5413) .. ( 0.2430, 0.5712)
3284 .. controls ( 0.2494, 0.5791) and ( 0.2509, 0.6061) .. ( 0.2523, 0.6170)
3285 .. controls ( 0.2545, 0.6376) and ( 0.2547, 0.6388) .. ( 0.2523, 0.6595)
3286 -- ( 0.2865, 0.6681)
3287 .. controls ( 0.3094, 0.6426) and ( 0.3194, 0.6608) .. ( 0.3291, 0.6852)
3288 -- ( 0.2865, 0.6937)
3289 .. controls ( 0.3061, 0.7101) and ( 0.3276, 0.7308) .. ( 0.3547, 0.7322)
3290 .. controls ( 0.3792, 0.7335) and ( 0.4787, 0.6707) .. ( 0.4596, 0.7446)
3291 .. controls ( 0.4487, 0.7866) and ( 0.4132, 0.7751) .. ( 0.3912, 0.7800)
3292 .. controls ( 0.3681, 0.7853) and ( 0.3549, 0.8026) .. ( 0.3291, 0.7997)
3293 --cycle
3294 ( 0.0971, 0.7996)
3295 .. controls ( 0.0971, 0.7996) and (-0.0371, 0.7713) .. (-0.0393, 0.7247)
3296 .. controls (-0.0408, 0.6927) and ( 0.0217, 0.7175) .. ( 0.0521, 0.7277)
3297 .. controls ( 0.0789, 0.7366) and ( 0.0971, 0.7996) .. ( 0.0971, 0.7996)
3298 --cycle
3299 (-0.1571, 0.7961)
3300 -- (-0.1485, 0.7961)
3301 -- (-0.1485, 0.7875)
3302 -- (-0.1400, 0.7875)
3303 -- (-0.1400, 0.7789)
3304 -- (-0.1485, 0.7875)
3305 --cycle
3306 (-0.3689, 0.7733)
3307 .. controls (-0.3791, 0.7835) and (-0.4247, 0.7612) .. (-0.4247, 0.7612)
3308 .. controls (-0.4247, 0.7612) and (-0.4258, 0.7138) .. (-0.4104, 0.7184)
3309 .. controls (-0.3965, 0.7227) and (-0.3586, 0.7631) .. (-0.3689, 0.7733)
3310 --cycle
3311 ( 0.3462, 0.7278)
3312 -- ( 0.3462, 0.6766)
3313 -- ( 0.3804, 0.7107)
3314 --cycle
3315 ( 0.1142, 0.7077)
3316 .. controls ( 0.1016, 0.7065) and ( 0.0878, 0.7029) .. ( 0.0733, 0.6974)
3317 .. controls ( 0.0595, 0.6920) and ( 0.0449, 0.6883) .. ( 0.0332, 0.6789)
3318 .. controls ( 0.0192, 0.6678) and ( 0.0113, 0.6500) .. ( 0.0014, 0.6354)

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3319 .. controls (-0.0079, 0.6219) and (-0.0221, 0.6074) .. (-0.0243, 0.5905)
3320 .. controls (-0.0267, 0.5713) and ( 0.0128, 0.4923) .. ( 0.0326, 0.4877)
3321 .. controls ( 0.0455, 0.4824) and ( 0.0530, 0.4866) .. ( 0.0647, 0.4877)
3322 .. controls ( 0.0870, 0.4591) and ( 0.0975, 0.4638) .. ( 0.1331, 0.4633)
3323 .. controls ( 0.1499, 0.4110) and ( 0.1908, 0.4198) .. ( 0.1671, 0.4890)
3324 .. controls ( 0.1267, 0.5142) and ( 0.1094, 0.5105) .. ( 0.0647, 0.4975)
3325 .. controls ( 0.0889, 0.5509) and ( 0.0981, 0.5486) .. ( 0.0733, 0.6084)
3326 .. controls ( 0.1221, 0.6144) and ( 0.1333, 0.6047) .. ( 0.1415, 0.6510)
3327 -- ( 0.1927, 0.6425)
3328 .. controls ( 0.1814, 0.6932) and ( 0.1526, 0.7111) .. ( 0.1142, 0.7077)
3329 --cycle
3330 ( 0.1671, 0.4890)
3331 -- ( 0.2182, 0.4890)
3332 .. controls ( 0.2474, 0.4580) and ( 0.2982, 0.5061) .. ( 0.2981, 0.5238)
3333 .. controls ( 0.2981, 0.5425) and ( 0.2721, 0.5720) .. ( 0.2418, 0.5318)
3334 -- ( 0.2182, 0.4975)
3335 .. controls ( 0.1923, 0.5152) and ( 0.1850, 0.5158) .. ( 0.1671, 0.4890)
3336 --cycle
3337 (-0.1058, 0.6937)
3338 -- (-0.0973, 0.6595)
3339 -- (-0.0802, 0.6595)
3340 -- (-0.0718, 0.6937)
3341 --cycle
3342 ( 0.3889, 0.6852)
3343 .. controls ( 0.3954, 0.6469) and ( 0.4108, 0.6416) .. ( 0.4314, 0.6766)
3344 --cycle
3345 ( 0.4826, 0.6852)
3346 -- ( 0.4562, 0.6475)
3347 .. controls ( 0.4460, 0.6335) and ( 0.4249, 0.5852) .. ( 0.4639, 0.5976)
3348 .. controls ( 0.4953, 0.6076) and ( 0.5058, 0.6583) .. ( 0.4998, 0.6852)
3349 --cycle
3350 (-0.0879, 0.6326)
3351 .. controls (-0.1189, 0.6139) and (-0.0956, 0.5976) .. (-0.0822, 0.6003)
3352 .. controls (-0.0699, 0.6027) and (-0.0544, 0.6253) .. (-0.0879, 0.6326)
3353 --cycle
3354 ( 0.3034, 0.6255)
3355 -- ( 0.2694, 0.6170)
3356 -- ( 0.2694, 0.5998)
3357 -- ( 0.3034, 0.5913)
3358 --cycle
3359 ( 0.6085, 0.6015)
3360 .. controls ( 0.5969, 0.6043) and ( 0.5796, 0.6004) .. ( 0.5688, 0.5964)
3361 .. controls ( 0.5189, 0.5780) and ( 0.5216, 0.5317) .. ( 0.5338, 0.4890)
3362 .. controls ( 0.5892, 0.5200) and ( 0.5513, 0.5451) .. ( 0.6191, 0.5657)
3363 .. controls ( 0.6318, 0.5296) and ( 0.6176, 0.4979) .. ( 0.6703, 0.5572)
3364 .. controls ( 0.6580, 0.5662) and ( 0.6196, 0.5989) .. ( 0.6085, 0.6015)
3365 --cycle
3366 ( 0.6703, 0.5572)
3367 .. controls ( 0.6650, 0.4639) and ( 0.7377, 0.4434) .. ( 0.6703, 0.5572)
3368 --cycle
3369 ( 0.2950, 0.5828)
3370 -- ( 0.3034, 0.5487)
3371 -- ( 0.3206, 0.5487)

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3372 -- ( 0.3291, 0.5572)
3373 -- ( 0.3291, 0.5743)
3374 --cycle
3375 (-0.2167, 0.5572)
3376 .. controls (-0.2524, 0.4984) and (-0.2378, 0.4949) .. (-0.1997, 0.4463)
3377 -- (-0.1656, 0.4548)
3378 -- (-0.1656, 0.4719)
3379 -- (-0.1997, 0.4804)
3380 -- (-0.1997, 0.4719)
3381 -- (-0.2082, 0.4804)
3382 -- (-0.1997, 0.4804)
3383 .. controls (-0.1944, 0.5170) and (-0.1913, 0.5288) .. (-0.2167, 0.5572)
3384 --cycle
3385 ( 0.4528, 0.5567)
3386 .. controls ( 0.4208, 0.5591) and ( 0.3875, 0.5291) .. ( 0.3974, 0.4804)
3387 -- ( 0.4998, 0.5146)
3388 .. controls ( 0.4909, 0.5422) and ( 0.4721, 0.5552) .. ( 0.4528, 0.5567)
3389 --cycle
3390 (-0.5836, 0.5401)
3391 .. controls (-0.5724, 0.5036) and (-0.5428, 0.4697) .. (-0.5238, 0.5231)
3392 --cycle
3393 (-0.0890, 0.5163)
3394 .. controls (-0.1486, 0.4959) and (-0.1212, 0.4523) .. (-0.0806, 0.4615)
3395 .. controls (-0.0429, 0.4702) and (-0.0388, 0.5108) .. (-0.0890, 0.5163)
3396 --cycle
3397 ( 0.3494, 0.5160)
3398 .. controls ( 0.3442, 0.5162) and ( 0.3376, 0.5157) .. ( 0.3291, 0.5146)
3399 -- ( 0.3632, 0.4804)
3400 .. controls ( 0.3666, 0.5059) and ( 0.3648, 0.5149) .. ( 0.3494, 0.5160)
3401 --cycle
3402 ( 0.6832, 0.4635)
3403 .. controls ( 0.6577, 0.4592) and ( 0.6354, 0.4224) .. ( 0.6277, 0.3866)
3404 -- ( 0.6618, 0.3781)
3405 .. controls ( 0.6758, 0.4215) and ( 0.6897, 0.4164) .. ( 0.7299, 0.4293)
3406 .. controls ( 0.7150, 0.4573) and ( 0.6984, 0.4662) .. ( 0.6832, 0.4635)
3407 --cycle
3408 ( 0.3846, 0.4569)
3409 .. controls ( 0.3643, 0.4547) and ( 0.3427, 0.4484) .. ( 0.3206, 0.4379)
3410 .. controls ( 0.2993, 0.4278) and ( 0.2743, 0.4198) .. ( 0.2665, 0.3948)
3411 .. controls ( 0.2602, 0.3747) and ( 0.2710, 0.3497) .. ( 0.2940, 0.3491)
3412 .. controls ( 0.3208, 0.3484) and ( 0.3628, 0.4037) .. ( 0.4059, 0.3999)
3413 .. controls ( 0.4648, 0.3948) and ( 0.4817, 0.3238) .. ( 0.5508, 0.3184)
3414 -- ( 0.5594, 0.2842)
3415 .. controls ( 0.6325, 0.3301) and ( 0.6184, 0.4000) .. ( 0.5253, 0.3610)
3416 .. controls ( 0.4966, 0.4310) and ( 0.4457, 0.4630) .. ( 0.3846, 0.4569)
3417 --cycle
3418 ( 0.0020, 0.4093)
3419 .. controls (-0.0096, 0.4099) and (-0.0218, 0.4039) .. (-0.0547, 0.3920)
3420 .. controls (-0.0742, 0.3851) and (-0.1009, 0.3815) .. (-0.1085, 0.3591)
3421 .. controls (-0.1143, 0.3413) and (-0.1036, 0.3179) .. (-0.0973, 0.3014)
3422 .. controls (-0.1114, 0.2946) and (-0.1334, 0.2825) .. (-0.1485, 0.2820)
3423 .. controls (-0.1767, 0.2809) and (-0.1949, 0.3055) .. (-0.2182, 0.3110)
3424 .. controls (-0.2417, 0.3165) and (-0.3307, 0.2833) .. (-0.3437, 0.2635)

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3425 .. controls (-0.3530, 0.2471) and (-0.3474, 0.2253) .. (-0.3437, 0.2075)
3426 .. controls (-0.4324, 0.1756) and (-0.3706, 0.0831) .. (-0.2765, 0.0710)
3427 .. controls (-0.2795, 0.0550) and (-0.2801, 0.0364) .. (-0.2860, 0.0213)
3428 .. controls (-0.2997,-0.0142) and (-0.3382,-0.0416) .. (-0.2680,-0.0825)
3429 -- (-0.2424, 0.0027)
3430 -- (-0.1997,-0.0143)
3431 .. controls (-0.1918, 0.0295) and (-0.2082, 0.0371) .. (-0.1741, 0.0710)
3432 .. controls (-0.1600, 0.0270) and (-0.1316, 0.0212) .. (-0.1230, 0.0710)
3433 -- (-0.0547, 0.0710)
3434 -- (-0.0547, 0.0198)
3435 .. controls (-0.0089, 0.0346) and (-0.0127, 0.0528) .. (-0.0121, 0.0966)
3436 .. controls ( 0.0434, 0.0981) and ( 0.0809, 0.1179) .. ( 0.0988, 0.1733)
3437 -- ( 0.0561, 0.1477)
3438 -- ( 0.0647, 0.1477)
3439 -- ( 0.0647, 0.1392)
3440 -- ( 0.0561, 0.1477)
3441 -- (-0.0333, 0.1681)
3442 -- (-0.0973, 0.1990)
3443 .. controls (-0.1035, 0.1519) and (-0.0915, 0.1406) .. (-0.0462, 0.1307)
3444 -- (-0.0547, 0.1051)
3445 .. controls (-0.0809, 0.1134) and (-0.1575, 0.1376) .. (-0.1816, 0.1275)
3446 .. controls (-0.1979, 0.1207) and (-0.2008, 0.1105) .. (-0.2082, 0.0966)
3447 -- (-0.2765, 0.0796)
3448 .. controls (-0.2913, 0.1042) and (-0.2904, 0.1037) .. (-0.3191, 0.1051)
3449 -- (-0.3277, 0.1307)
3450 -- (-0.3020, 0.1392)
3451 -- (-0.3191, 0.1733)
3452 -- (-0.2680, 0.2416)
3453 .. controls (-0.2555, 0.2025) and (-0.2434, 0.1999) .. (-0.2082, 0.1819)
3454 .. controls (-0.2103, 0.2198) and (-0.2204, 0.2217) .. (-0.2509, 0.2416)
3455 -- (-0.1571, 0.2416)
3456 -- (-0.0973, 0.1990)
3457 .. controls (-0.0622, 0.2159) and (-0.0506, 0.2107) .. (-0.0376, 0.2501)
3458 -- (-0.0718, 0.2672)
3459 -- (-0.0121, 0.2842)
3460 -- (-0.0121, 0.3014)
3461 -- (-0.0462, 0.3184)
3462 -- ( 0.0221, 0.3439)
3463 .. controls ( 0.0070, 0.2950) and ( 0.0355, 0.2771) .. ( 0.0818, 0.2757)
3464 -- ( 0.0561, 0.3354)
3465 .. controls ( 0.1139, 0.3092) and ( 0.1160, 0.3517) .. ( 0.0949, 0.3683)
3466 -- ( 0.0561, 0.3859)
3467 .. controls ( 0.0248, 0.4010) and ( 0.0136, 0.4085) .. ( 0.0020, 0.4093)
3468 --cycle
3469 (-0.2680,-0.0825)
3470 .. controls (-0.2752,-0.1245) and (-0.2656,-0.1332) .. (-0.2253,-0.1423)
3471 .. controls (-0.2780,-0.1694) and (-0.3487,-0.1517) .. (-0.3277,-0.2360)
3472 -- (-0.3958,-0.2275)
3473 .. controls (-0.3850,-0.1662) and (-0.4133,-0.1372) .. (-0.4727,-0.1337)
3474 -- (-0.4727,-0.0910)
3475 .. controls (-0.5590,-0.0763) and (-0.5042,-0.0134) .. (-0.5750,-0.0228)
3476 .. controls (-0.5589,-0.0849) and (-0.5477,-0.0819) .. (-0.5750,-0.1423)
3477 .. controls (-0.6476,-0.1314) and (-0.6815,-0.1792) .. (-0.6262,-0.2360)

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3478 .. controls (-0.6614,-0.2507) and (-0.6863,-0.2704) .. (-0.6674,-0.3120)
3479 .. controls (-0.6596,-0.3292) and (-0.6399,-0.3442) .. (-0.6461,-0.3629)
3480 .. controls (-0.6528,-0.3836) and (-0.7224,-0.4151) .. (-0.6960,-0.4711)
3481 .. controls (-0.6692,-0.5273) and (-0.5938,-0.5008) .. (-0.6603,-0.4579)
3482 -- (-0.6262,-0.4237)
3483 -- (-0.5921,-0.4579)
3484 .. controls (-0.5645,-0.3552) and (-0.5902,-0.3724) .. (-0.6177,-0.2872)
3485 -- (-0.5750,-0.2531)
3486 -- (-0.6177,-0.2446)
3487 -- (-0.6006,-0.2190)
3488 .. controls (-0.5707,-0.2398) and (-0.5626,-0.2347) .. (-0.5494,-0.2019)
3489 -- (-0.5836,-0.1848)
3490 -- (-0.5153,-0.1592)
3491 .. controls (-0.5297,-0.1903) and (-0.5326,-0.1983) .. (-0.4983,-0.2105)
3492 -- (-0.4983,-0.1763)
3493 .. controls (-0.4268,-0.1951) and (-0.4189,-0.2337) .. (-0.3789,-0.2872)
3494 .. controls (-0.4036,-0.3020) and (-0.4028,-0.3012) .. (-0.4044,-0.3299)
3495 -- (-0.3362,-0.3299)
3496 .. controls (-0.3465,-0.3786) and (-0.3284,-0.3796) .. (-0.2850,-0.3811)
3497 -- (-0.2850,-0.4151)
3498 .. controls (-0.2401,-0.4035) and (-0.1731,-0.3767) .. (-0.1571,-0.3299)
3499 .. controls (-0.1233,-0.3324) and (-0.1022,-0.3221) .. (-0.1230,-0.2872)
3500 -- (-0.1143,-0.2360)
3501 -- (-0.1741,-0.2531)
3502 -- (-0.1741,-0.2701)
3503 -- (-0.1485,-0.2787)
3504 -- (-0.1571,-0.3214)
3505 -- (-0.2765,-0.3640)
3506 .. controls (-0.2785,-0.3286) and (-0.2853,-0.3271) .. (-0.3191,-0.3214)
3507 -- (-0.3191,-0.3299)
3508 -- (-0.3277,-0.3214)
3509 -- (-0.3191,-0.3214)
3510 .. controls (-0.3191,-0.3214) and (-0.2922,-0.3221) .. (-0.2850,-0.3128)
3511 .. controls (-0.2781,-0.3038) and (-0.2850,-0.2787) .. (-0.2850,-0.2787)
3512 .. controls (-0.2850,-0.2462) and (-0.2522,-0.2669) .. (-0.2424,-0.2360)
3513 -- (-0.2935,-0.2360)
3514 -- (-0.2509,-0.2019)
3515 -- (-0.2424,-0.2360)
3516 .. controls (-0.1852,-0.2624) and (-0.2046,-0.2259) .. (-0.1740,-0.2170)
3517 .. controls (-0.1599,-0.2119) and (-0.1427,-0.2266) .. (-0.1281,-0.2170)
3518 .. controls (-0.1166,-0.2109) and (-0.1070,-0.1747) .. (-0.1656,-0.1848)
3519 -- (-0.2082,-0.0228)
3520 -- (-0.2253,-0.0228)
3521 .. controls (-0.2307,-0.0463) and (-0.2347,-0.0485) .. (-0.2167,-0.0654)
3522 -- (-0.2253,-0.0910)
3523 --cycle
3524 ( 0.7385, 0.3781)
3525 .. controls ( 0.7464, 0.3334) and ( 0.7712, 0.3235) .. ( 0.7897, 0.3696)
3526 --cycle
3527 ( 0.3825, 0.3684)
3528 .. controls ( 0.3722, 0.3709) and ( 0.3598, 0.3638) .. ( 0.3547, 0.3341)
3529 -- ( 0.3712, 0.3341)
3530 .. controls ( 0.4107, 0.3328) and ( 0.3998, 0.3641) .. ( 0.3825, 0.3684)

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3531 --cycle
3532 ( 0.3547, 0.3341)
3533 -- ( 0.3034, 0.3280)
3534 .. controls ( 0.2587, 0.3223) and ( 0.2449, 0.3331) .. ( 0.2267, 0.2842)
3535 -- ( 0.1515, 0.2970)
3536 .. controls ( 0.1395, 0.3001) and ( 0.1217, 0.3113) .. ( 0.1096, 0.3062)
3537 .. controls ( 0.0947, 0.3000) and ( 0.0955, 0.2804) .. ( 0.0944, 0.2671)
3538 .. controls ( 0.0897, 0.2118) and ( 0.0889, 0.2059) .. ( 0.1158, 0.1563)
3539 -- ( 0.1331, 0.1563)
3540 -- ( 0.1415, 0.1648)
3541 -- ( 0.1415, 0.2501)
3542 -- ( 0.2449, 0.2446)
3543 .. controls ( 0.2870, 0.2248) and ( 0.2549, 0.1801) .. ( 0.3376, 0.1733)
3544 -- ( 0.3376, 0.2245)
3545 -- ( 0.3889, 0.2075)
3546 .. controls ( 0.3692, 0.2680) and ( 0.3319, 0.2493) .. ( 0.3034, 0.2928)
3547 .. controls ( 0.3440, 0.2858) and ( 0.3561, 0.2934) .. ( 0.3547, 0.3341)
3548 --cycle
3549 ( 0.4285, 0.3341)
3550 .. controls ( 0.4111, 0.3048) and ( 0.4418, 0.2997) .. ( 0.4508, 0.3082)
3551 .. controls ( 0.4603, 0.3170) and ( 0.4582, 0.3376) .. ( 0.4285, 0.3341)
3552 --cycle
3553 ( 0.7199, 0.3309)
3554 .. controls ( 0.7120, 0.3311) and ( 0.7041, 0.3301) .. ( 0.6963, 0.3276)
3555 .. controls ( 0.6516, 0.3141) and ( 0.5998, 0.2127) .. ( 0.6788, 0.2075)
3556 -- ( 0.6874, 0.1819)
3557 .. controls ( 0.6908, 0.1882) and ( 0.6948, 0.1871) .. ( 0.6958, 0.2009)
3558 .. controls ( 0.6967, 0.2152) and ( 0.6850, 0.2341) .. ( 0.6875, 0.2482)
3559 .. controls ( 0.6912, 0.2697) and ( 0.7185, 0.2790) .. ( 0.7404, 0.2558)
3560 -- ( 0.7556, 0.2330)
3561 .. controls ( 0.8209, 0.2699) and ( 0.7743, 0.3292) .. ( 0.7199, 0.3309)
3562 --cycle
3563 (-0.4641, 0.3269)
3564 -- (-0.4556, 0.2928)
3565 -- (-0.4386, 0.2928)
3566 -- (-0.4300, 0.3269)
3567 --cycle
3568 (-0.3532, 0.3269)
3569 .. controls (-0.3838, 0.3252) and (-0.3857, 0.3233) .. (-0.3874, 0.2928)
3570 .. controls (-0.3613, 0.3019) and (-0.3623, 0.3007) .. (-0.3532, 0.3269)
3571 --cycle
3572 (-0.7723, 0.3114)
3573 .. controls (-0.9303, 0.2491) and (-0.8236, 0.1766) .. (-0.9066, 0.1318)
3574 .. controls (-0.9222, 0.1231) and (-0.9315, 0.1156) .. (-0.9385, 0.1084)
3575 -- (-0.9505, 0.0875)
3576 .. controls (-0.9537, 0.0757) and (-0.9542, 0.0621) .. (-0.9542, 0.0410)
3577 -- (-0.9333, 0.0454)
3578 .. controls (-0.9116, 0.1020) and (-0.8383, 0.0970) .. (-0.8943, 0.1349)
3579 .. controls (-0.8577, 0.1472) and (-0.8473, 0.1249) .. (-0.8748, 0.1652)
3580 -- (-0.8414, 0.1559)
3581 .. controls (-0.8055, 0.1614) and (-0.8119, 0.2075) .. (-0.8279, 0.2170)
3582 .. controls (-0.8020, 0.2197) and (-0.8300, 0.2698) .. (-0.8062, 0.2572)
3583 .. controls (-0.7862, 0.2467) and (-0.7713, 0.2258) .. (-0.7547, 0.2261)

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3584 .. controls (-0.7211, 0.2267) and (-0.7384, 0.2895) .. (-0.7723, 0.3114)
3585 --cycle
3586 ( 0.5167, 0.2928)
3587 -- ( 0.5083, 0.2842)
3588 -- ( 0.5083, 0.2672)
3589 -- ( 0.5167, 0.2587)
3590 -- ( 0.5338, 0.2587)
3591 -- ( 0.5423, 0.2672)
3592 -- ( 0.5423, 0.2842)
3593 -- ( 0.5338, 0.2928)
3594 --cycle
3595 ( 0.8233, 0.2914)
3596 .. controls ( 0.8159, 0.2897) and ( 0.8101, 0.2823) .. ( 0.8101, 0.2664)
3597 .. controls ( 0.8101, 0.2592) and ( 0.7901, 0.2245) .. ( 0.7943, 0.2184)
3598 .. controls ( 0.8010, 0.2085) and ( 0.8177, 0.1916) .. ( 0.8341, 0.1843)
3599 -- ( 0.7897, 0.1051)
3600 .. controls ( 0.7638, 0.1109) and ( 0.6977, 0.1143) .. ( 0.6790, 0.0913)
3601 .. controls ( 0.6678, 0.0772) and ( 0.6727, 0.0528) .. ( 0.6644, 0.0283)
3602 .. controls ( 0.6511,-0.0104) and ( 0.6263,-0.0275) .. ( 0.5936,-0.0484)
3603 .. controls ( 0.5977,-0.0521) and ( 0.6009,-0.0593) .. ( 0.6125,-0.0633)
3604 .. controls ( 0.6432,-0.0738) and ( 0.6954,-0.0310) .. ( 0.7067,-0.0043)
3605 .. controls ( 0.7123, 0.0088) and ( 0.7121, 0.0229) .. ( 0.7130, 0.0368)
3606 .. controls ( 0.7585, 0.0333) and ( 0.7707, 0.0484) .. ( 0.7897, 0.0881)
3607 -- ( 0.8409, 0.0027)
3608 .. controls ( 0.7828,-0.0157) and ( 0.7583,-0.0941) .. ( 0.8409,-0.1337)
3609 .. controls ( 0.8561,-0.0647) and ( 0.8176,-0.0742) .. ( 0.8836,-0.0143)
3610 -- ( 0.9348,-0.0654)
3611 .. controls ( 0.9443,-0.0311) and ( 0.9398,-0.0319) .. ( 0.9430,-0.0008)
3612 .. controls ( 0.9475, 0.0433) and ( 0.9603, 0.0556) .. ( 0.8921, 0.0796)
3613 -- ( 0.8836, 0.0710)
3614 -- ( 0.8836, 0.0540)
3615 -- ( 0.9006, 0.0198)
3616 .. controls ( 0.8705, 0.0555) and ( 0.8589, 0.0671) .. ( 0.8494, 0.1137)
3617 -- ( 0.8921, 0.0881)
3618 .. controls ( 0.9100, 0.1275) and ( 0.9093, 0.1211) .. ( 0.9077, 0.1641)
3619 .. controls ( 0.8502, 0.2199) and ( 0.8502, 0.2055) .. ( 0.8245, 0.2294)
3620 .. controls ( 0.8511, 0.2387) and ( 0.8571, 0.2533) .. ( 0.8546, 0.2660)
3621 -- ( 0.8445, 0.2834)
3622 .. controls ( 0.8380, 0.2892) and ( 0.8301, 0.2928) .. ( 0.8233, 0.2914)
3623 --cycle
3624 (-0.6221, 0.2851)
3625 .. controls (-0.6403, 0.2814) and (-0.6578, 0.2533) .. (-0.6578, 0.2330)
3626 .. controls (-0.6578, 0.2083) and (-0.6228, 0.1685) .. (-0.6090, 0.1392)
3627 .. controls (-0.6712, 0.1174) and (-0.6013, 0.0486) .. (-0.5914, 0.0454)
3628 .. controls (-0.5625, 0.0361) and (-0.5594, 0.0690) .. (-0.5384, 0.0751)
3629 .. controls (-0.5161, 0.0820) and (-0.5142, 0.0619) .. (-0.4641, 0.0796)
3630 .. controls (-0.4838, 0.1372) and (-0.5135, 0.1504) .. (-0.5665, 0.1733)
3631 -- (-0.5323, 0.2075)
3632 -- (-0.5665, 0.2160)
3633 -- (-0.5665, 0.1819)
3634 -- (-0.5921, 0.2245)
3635 -- (-0.6006, 0.2330)
3636 -- (-0.6090, 0.2416)

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3637 -- (-0.6006, 0.2416)
3638 -- (-0.6006, 0.2330)
3639 -- (-0.5921, 0.2330)
3640 -- (-0.5921, 0.2245)
3641 .. controls (-0.5591, 0.2361) and (-0.5513, 0.2585) .. (-0.5921, 0.2587)
3642 .. controls (-0.5999, 0.2809) and (-0.6112, 0.2874) .. (-0.6221, 0.2851)
3643 --cycle
3644 (-0.4001, 0.2659)
3645 -- (-0.4398, 0.2231)
3646 -- (-0.4713, 0.1989)
3647 .. controls (-0.5030, 0.1708) and (-0.4873, 0.1496) .. (-0.4486, 0.1607)
3648 .. controls (-0.4215, 0.1683) and (-0.3832, 0.1951) .. (-0.3704, 0.2199)
3649 .. controls (-0.3565, 0.2464) and (-0.3702, 0.2690) .. (-0.4001, 0.2659)
3650 --cycle
3651 ( 0.5167, 0.2501)
3652 .. controls ( 0.4726, 0.2275) and ( 0.4751, 0.2109) .. ( 0.4771, 0.1648)
3653 .. controls ( 0.4776, 0.1495) and ( 0.4771, 0.1247) .. ( 0.4946, 0.1178)
3654 .. controls ( 0.5149, 0.1096) and ( 0.5288, 0.1359) .. ( 0.5681, 0.1435)
3655 .. controls ( 0.6164, 0.1530) and ( 0.6391, 0.1274) .. ( 0.6568, 0.1214)
3656 .. controls ( 0.6669, 0.1180) and ( 0.6795, 0.1163) .. ( 0.6862, 0.1272)
3657 .. controls ( 0.7003, 0.1512) and ( 0.6673, 0.1556) .. ( 0.6532, 0.1563)
3658 .. controls ( 0.6261, 0.2314) and ( 0.5966, 0.1859) .. ( 0.5605, 0.1960)
3659 .. controls ( 0.5390, 0.2022) and ( 0.5268, 0.2319) .. ( 0.5167, 0.2501)
3660 --cycle
3661 (-0.0462, 0.2075)
3662 -- (-0.0462, 0.1819)
3663 -- (-0.0206, 0.1819)
3664 -- (-0.0206, 0.2075)
3665 --cycle
3666 (-0.7371, 0.1990)
3667 -- (-0.7371, 0.1563)
3668 -- (-0.7115, 0.1905)
3669 -- (-0.7200, 0.1990)
3670 --cycle
3671 (-0.1656, 0.1905)
3672 -- (-0.1400, 0.1648)
3673 --cycle
3674 (-0.7797, 0.1819)
3675 -- (-0.7883, 0.1733)
3676 -- (-0.7883, 0.1563)
3677 -- (-0.7542, 0.1477)
3678 -- (-0.7627, 0.1819)
3679 --cycle
3680 ( 0.1671, 0.1819)
3681 -- ( 0.1841, 0.1477)
3682 --cycle
3683 ( 0.6447, 0.1477)
3684 -- ( 0.6532, 0.1477)
3685 -- ( 0.6532, 0.1392)
3686 --cycle
3687 (-0.7081, 0.1437)
3688 .. controls (-0.7387, 0.1429) and (-0.7462, 0.1254) .. (-0.7593, 0.0844)
3689 .. controls (-0.7628, 0.0670) and (-0.7720, 0.0499) .. (-0.7593, 0.0321)

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3690 .. controls (-0.7496, 0.0145) and (-0.7241, 0.0137) .. (-0.7173, 0.0321)
3691 .. controls (-0.7114, 0.0479) and (-0.7222, 0.0657) .. (-0.7285, 0.0796)
3692 .. controls (-0.6938, 0.0968) and (-0.6811, 0.1011) .. (-0.6688, 0.1392)
3693 .. controls (-0.6852, 0.1425) and (-0.6979, 0.1439) .. (-0.7081, 0.1437)
3694 --cycle
3695 ( 0.8921, 0.1392)
3696 -- ( 0.9006, 0.1392)
3697 -- ( 0.9006, 0.1307)
3698 --cycle
3699 ( 0.5765, 0.1222)
3700 -- ( 0.5850, 0.0881)
3701 -- ( 0.6021, 0.0881)
3702 -- ( 0.6106, 0.1222)
3703 --cycle
3704 ( 0.2872, 0.1175)
3705 .. controls ( 0.2767, 0.1166) and ( 0.2651, 0.1135) .. ( 0.2533, 0.1071)
3706 .. controls ( 0.2151, 0.0867) and ( 0.2220, 0.0479) .. ( 0.2267, 0.0113)
3707 .. controls ( 0.2625, 0.0237) and ( 0.2504, 0.0254) .. ( 0.2701, 0.0519)
3708 .. controls ( 0.2958, 0.0863) and ( 0.3249, 0.0559) .. ( 0.3338, 0.0822)
3709 .. controls ( 0.3402, 0.1009) and ( 0.3185, 0.1198) .. ( 0.2872, 0.1175)
3710 --cycle
3711 ( 0.4845, 0.1051)
3712 .. controls ( 0.4706, 0.1009) and ( 0.4616, 0.0995) .. ( 0.4512, 0.0905)
3713 .. controls ( 0.4040, 0.0493) and ( 0.4796,-0.0172) .. ( 0.4845, 0.0710)
3714 .. controls ( 0.4877, 0.0867) and ( 0.4856, 0.0907) .. ( 0.4845, 0.1051)
3715 --cycle
3716 ( 0.6362, 0.1051)
3717 -- ( 0.6277, 0.0966)
3718 -- ( 0.6277, 0.0796)
3719 -- ( 0.6618, 0.0710)
3720 -- ( 0.6532, 0.1051)
3721 --cycle
3722 ( 0.0988, 0.0966)
3723 -- ( 0.0647, 0.0881)
3724 -- ( 0.0647, 0.0710)
3725 -- ( 0.0902, 0.0625)
3726 .. controls ( 0.0813, 0.0194) and ( 0.0842, 0.0065) .. ( 0.1244,-0.0143)
3727 -- ( 0.1331, 0.0283)
3728 -- ( 0.1671, 0.0368)
3729 -- ( 0.1671, 0.0540)
3730 .. controls ( 0.1326, 0.0659) and ( 0.1186, 0.0637) .. ( 0.0988, 0.0966)
3731 --cycle
3732 (-0.8125, 0.0621)
3733 .. controls (-0.8490, 0.0401) and (-0.8237, 0.0162) .. (-0.8062, 0.0190)
3734 .. controls (-0.7883, 0.0219) and (-0.7704, 0.0544) .. (-0.8125, 0.0621)
3735 --cycle
3736 ( 0.5167, 0.0540)
3737 -- ( 0.5083, 0.0198)
3738 -- ( 0.5423, 0.0283)
3739 -- ( 0.5423, 0.0454)
3740 -- ( 0.5338, 0.0540)
3741 --cycle
3742 (-0.0973, 0.0454)

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3743 -- (-0.1058, 0.0368)
3744 -- (-0.1058, 0.0198)
3745 -- (-0.0718, 0.0113)
3746 -- (-0.0802, 0.0454)
3747 --cycle
3748 (-0.0035, 0.0368)
3749 -- (-0.0210, 0.0109)
3750 .. controls (-0.0655,-0.0708) and ( 0.0385,-0.0566) .. ( 0.0166, 0.0109)
3751 .. controls ( 0.0120, 0.0245) and ( 0.0056, 0.0275) .. (-0.0035, 0.0368)
3752 --cycle
3753 (-0.4977, 0.0207)
3754 .. controls (-0.5147, 0.0204) and (-0.5312, 0.0080) .. (-0.5211,-0.0096)
3755 .. controls (-0.5118,-0.0261) and (-0.4926,-0.0166) .. (-0.4645,-0.0487)
3756 .. controls (-0.4440,-0.0720) and (-0.4524,-0.0706) .. (-0.4214,-0.0825)
3757 .. controls (-0.4050,-0.0235) and (-0.4308, 0.0217) .. (-0.4977, 0.0207)
3758 --cycle
3759 ( 0.3756, 0.0075)
3760 .. controls ( 0.3646, 0.0069) and ( 0.3522, 0.0045) .. ( 0.3376, 0.0002)
3761 .. controls ( 0.3227,-0.0042) and ( 0.3054,-0.0075) .. ( 0.2946,-0.0193)
3762 -- ( 0.2742,-0.0568)
3763 .. controls ( 0.2649,-0.0745) and ( 0.2554,-0.0861) .. ( 0.2571,-0.1073)
3764 .. controls ( 0.2601,-0.1471) and ( 0.2967,-0.2295) .. ( 0.3408,-0.1666)
3765 .. controls ( 0.3653,-0.1317) and ( 0.3284,-0.1299) .. ( 0.3717,-0.0654)
3766 .. controls ( 0.4033,-0.0789) and ( 0.4049,-0.0788) .. ( 0.4314,-0.0568)
3767 .. controls ( 0.4664,-0.1165) and ( 0.5153,-0.0409) .. ( 0.5152,-0.0308)
3768 .. controls ( 0.5148,-0.0111) and ( 0.4690, 0.0277) .. ( 0.4571,-0.0399)
3769 .. controls ( 0.4280,-0.0054) and ( 0.4082, 0.0095) .. ( 0.3756, 0.0075)
3770 --cycle
3771 (-0.9801, 0.0047)
3772 -- (-0.9427,-0.0792)
3773 -- (-0.8931,-0.0669)
3774 -- (-0.8538,-0.0818)
3775 .. controls (-0.8464,-0.0219) and (-0.9339,-0.0180) .. (-0.9801, 0.0047)
3776 --cycle
3777 ( 0.5423,-0.0484)
3778 -- ( 0.5594,-0.0997)
3779 .. controls ( 0.5416,-0.1040) and ( 0.4986,-0.1096) .. ( 0.4864,-0.1181)
3780 .. controls ( 0.4658,-0.1324) and ( 0.4601,-0.1677) .. ( 0.4793,-0.1854)
3781 .. controls ( 0.4883,-0.1938) and ( 0.5053,-0.1981) .. ( 0.5167,-0.2019)
3782 .. controls ( 0.4933,-0.2045) and ( 0.4609,-0.2005) .. ( 0.4427,-0.2156)
3783 .. controls ( 0.4166,-0.2372) and ( 0.4089,-0.2872) .. ( 0.4826,-0.2957)
3784 -- ( 0.4826,-0.2446)
3785 .. controls ( 0.5217,-0.2597) and ( 0.5287,-0.2486) .. ( 0.5167,-0.2105)
3786 .. controls ( 0.5424,-0.2023) and ( 0.5512,-0.1934) .. ( 0.5594,-0.1677)
3787 -- ( 0.6191,-0.1848)
3788 -- ( 0.6788,-0.3042)
3789 -- ( 0.6532,-0.3128)
3790 -- ( 0.6532,-0.3299)
3791 -- ( 0.7385,-0.3214)
3792 -- ( 0.7130,-0.2617)
3793 .. controls ( 0.7337,-0.2558) and ( 0.7608,-0.2439) .. ( 0.7812,-0.2454)
3794 .. controls ( 0.7973,-0.2453) and ( 0.8226,-0.2581) .. ( 0.8346,-0.2454)
3795 .. controls ( 0.8523,-0.2285) and ( 0.8216,-0.2043) .. ( 0.8067,-0.1989)

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3796 .. controls ( 0.7691,-0.1854) and ( 0.7439,-0.2093) .. ( 0.6805,-0.1933)
3797 -- ( 0.6805,-0.1448)
3798 -- ( 0.6017,-0.0907)
3799 -- ( 0.5680,-0.0907)
3800 -- ( 0.5765,-0.0484)
3801 --cycle
3802 (-0.7372,-0.0610)
3803 .. controls (-0.7812,-0.0612) and (-0.8222,-0.0885) .. (-0.7969,-0.1508)
3804 -- (-0.8546,-0.1518)
3805 .. controls (-0.8578,-0.0809) and (-0.9199,-0.0961) .. (-0.9322,-0.1220)
3806 -- (-0.9145,-0.1528)
3807 .. controls (-0.9119,-0.1539) and (-0.9110,-0.1554) .. (-0.9080,-0.1566)
3808 .. controls (-0.8746,-0.1628) and (-0.8911,-0.2081) .. (-0.8709,-0.2184)
3809 .. controls (-0.8479,-0.2301) and (-0.8289,-0.2160) .. (-0.8075,-0.2238)
3810 .. controls (-0.7880,-0.2309) and (-0.7418,-0.2959) .. (-0.7285,-0.2190)
3811 -- (-0.7712,-0.2105)
3812 .. controls (-0.7608,-0.1935) and (-0.7474,-0.1633) .. (-0.7309,-0.1535)
3813 .. controls (-0.7132,-0.1433) and (-0.6647,-0.1458) .. (-0.6532,-0.1225)
3814 .. controls (-0.6410,-0.0974) and (-0.6763,-0.0776) .. (-0.6945,-0.0697)
3815 .. controls (-0.7075,-0.0641) and (-0.7225,-0.0610) .. (-0.7372,-0.0610)
3816 --cycle
3817 ( 0.0790,-0.0703)
3818 .. controls ( 0.0586,-0.0724) and ( 0.0391,-0.0799) .. ( 0.0314,-0.0938)
3819 .. controls ( 0.0258,-0.1059) and ( 0.0293,-0.1207) .. ( 0.0314,-0.1337)
3820 .. controls (-0.0051,-0.1451) and (-0.0235,-0.1672) .. ( 0.0136,-0.1933)
3821 -- ( 0.0050,-0.2190)
3822 -- ( 0.0647,-0.2360)
3823 -- ( 0.0561,-0.2019)
3824 -- ( 0.0391,-0.2105)
3825 -- ( 0.0307,-0.2019)
3826 -- ( 0.0818,-0.1251)
3827 -- ( 0.0988,-0.1251)
3828 .. controls ( 0.1190,-0.1566) and ( 0.1311,-0.1660) .. ( 0.1671,-0.1763)
3829 .. controls ( 0.1712,-0.1381) and ( 0.1680,-0.1029) .. ( 0.1325,-0.0792)
3830 .. controls ( 0.1208,-0.0715) and ( 0.0994,-0.0682) .. ( 0.0790,-0.0703)
3831 --cycle
3832 (-0.0347,-0.0729)
3833 .. controls (-0.0400,-0.0723) and (-0.0465,-0.0725) .. (-0.0547,-0.0739)
3834 .. controls (-0.1154,-0.1097) and (-0.0914,-0.1419) .. (-0.0629,-0.1331)
3835 .. controls (-0.0318,-0.1235) and ( 0.0014,-0.0769) .. (-0.0347,-0.0729)
3836 --cycle
3837 (-0.1485,-0.0997)
3838 -- (-0.1656,-0.1166)
3839 -- (-0.1656,-0.1251)
3840 .. controls (-0.1656,-0.1251) and (-0.1284,-0.1383) .. (-0.1230,-0.1251)
3841 .. controls (-0.1184,-0.1140) and (-0.1485,-0.0997) .. (-0.1485,-0.0997)
3842 --cycle
3843 ( 0.8579,-0.1251)
3844 -- ( 0.8579,-0.1508)
3845 -- ( 0.8921,-0.1508)
3846 -- ( 0.8921,-0.1251)
3847 --cycle
3848 ( 0.3462,-0.1848)

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3849 .. controls ( 0.3553,-0.2111) and ( 0.3541,-0.2099) .. ( 0.3804,-0.2190)
3850 .. controls ( 0.3789,-0.1929) and ( 0.3722,-0.1863) .. ( 0.3462,-0.1848)
3851 --cycle
3852 ( 0.5680,-0.2105)
3853 -- ( 0.5680,-0.2360)
3854 -- ( 0.5936,-0.2360)
3855 -- ( 0.5936,-0.2105)
3856 --cycle
3857 ( 0.2429,-0.2175)
3858 .. controls ( 0.2301,-0.2183) and ( 0.2146,-0.2250) .. ( 0.2042,-0.2351)
3859 .. controls ( 0.1851,-0.2515) and ( 0.1867,-0.2802) .. ( 0.1841,-0.3042)
3860 -- ( 0.2267,-0.3128)
3861 .. controls ( 0.2366,-0.2535) and ( 0.2673,-0.2625) .. ( 0.2665,-0.2351)
3862 .. controls ( 0.2661,-0.2218) and ( 0.2558,-0.2167) .. ( 0.2429,-0.2175)
3863 --cycle
3864 (-0.8394,-0.2360)
3865 .. controls (-0.8657,-0.2452) and (-0.8037,-0.2814) .. (-0.8128,-0.3076)
3866 .. controls (-0.7841,-0.3060) and (-0.8155,-0.2595) .. (-0.8394,-0.2360)
3867 --cycle
3868 (-0.3106,-0.2446)
3869 .. controls (-0.3061,-0.2411) and (-0.2935,-0.2446) .. (-0.2935,-0.2446)
3870 .. controls (-0.2935,-0.2446) and (-0.3063,-0.2847) .. (-0.3191,-0.2787)
3871 .. controls (-0.3297,-0.2736) and (-0.3199,-0.2518) .. (-0.3106,-0.2446)
3872 --cycle
3873 ( 0.0809,-0.2495)
3874 .. controls ( 0.0629,-0.2468) and ( 0.0475,-0.2563) .. ( 0.0307,-0.2602)
3875 .. controls ( 0.0102,-0.2651) and (-0.0913,-0.2616) .. (-0.0376,-0.3640)
3876 .. controls (-0.1141,-0.3685) and (-0.1262,-0.4016) .. (-0.0926,-0.4664)
3877 .. controls (-0.0856,-0.4795) and (-0.0758,-0.5040) .. (-0.0668,-0.5138)
3878 .. controls (-0.0449,-0.5377) and ( 0.0001,-0.5440) .. ( 0.0307,-0.5431)
3879 -- ( 0.0221,-0.4579)
3880 -- (-0.0206,-0.4833)
3881 .. controls (-0.0180,-0.4388) and (-0.0055,-0.4140) .. (-0.0633,-0.4237)
3882 .. controls (-0.0215,-0.3935) and (-0.0083,-0.4022) .. ( 0.0050,-0.3640)
3883 -- ( 0.0476,-0.3555)
3884 -- ( 0.0476,-0.3384)
3885 .. controls ( 0.0149,-0.3341) and ( 0.0150,-0.3375) .. (-0.0035,-0.3640)
3886 .. controls (-0.0031,-0.3175) and ( 0.0507,-0.3021) .. ( 0.0895,-0.3132)
3887 .. controls ( 0.0967,-0.3153) and ( 0.1020,-0.3182) .. ( 0.1069,-0.3214)
3888 -- ( 0.0733,-0.3214)
3889 -- ( 0.0733,-0.3555)
3890 -- ( 0.1073,-0.3555)
3891 -- ( 0.1073,-0.3217)
3892 .. controls ( 0.1209,-0.3306) and ( 0.1314,-0.3431) .. ( 0.1671,-0.3555)
3893 .. controls ( 0.1861,-0.3011) and ( 0.1658,-0.3044) .. ( 0.1276,-0.2793)
3894 .. controls ( 0.1121,-0.2692) and ( 0.1003,-0.2524) .. ( 0.0809,-0.2495)
3895 --cycle
3896 ( 0.5253,-0.2617)
3897 .. controls ( 0.5159,-0.2894) and ( 0.5137,-0.2935) .. ( 0.5423,-0.3042)
3898 --cycle
3899 (-0.5836,-0.2872)
3900 -- (-0.5921,-0.3299)
3901 .. controls (-0.5632,-0.3196) and (-0.5624,-0.3175) .. (-0.5665,-0.2872)

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3902 --cycle
3903 ( 0.4825,-0.3113)
3904 .. controls ( 0.4709,-0.3098) and ( 0.4621,-0.3187) .. ( 0.4571,-0.3470)
3905 .. controls ( 0.4065,-0.2945) and ( 0.3565,-0.3080) .. ( 0.3141,-0.3613)
3906 .. controls ( 0.3029,-0.3754) and ( 0.2880,-0.3874) .. ( 0.2903,-0.4075)
3907 .. controls ( 0.2921,-0.4247) and ( 0.3027,-0.4361) .. ( 0.3120,-0.4493)
3908 .. controls ( 0.2945,-0.4516) and ( 0.2350,-0.4574) .. ( 0.2234,-0.4665)
3909 .. controls ( 0.2011,-0.4843) and ( 0.2099,-0.5378) .. ( 0.2182,-0.5602)
3910 -- ( 0.2352,-0.5602)
3911 .. controls ( 0.2421,-0.5417) and ( 0.2492,-0.5116) .. ( 0.2706,-0.5071)
3912 .. controls ( 0.3048,-0.4961) and ( 0.3439,-0.5674) .. ( 0.3618,-0.5071)
3913 -- ( 0.3618,-0.4833)
3914 -- ( 0.3974,-0.4919)
3915 -- ( 0.4059,-0.4579)
3916 -- ( 0.3376,-0.4493)
3917 -- ( 0.3717,-0.3896)
3918 .. controls ( 0.4306,-0.3991) and ( 0.4623,-0.4570) .. ( 0.4656,-0.3640)
3919 .. controls ( 0.4971,-0.3707) and ( 0.5062,-0.3751) .. ( 0.5253,-0.3470)
3920 -- ( 0.5451,-0.3694)
3921 .. controls ( 0.6171,-0.4271) and ( 0.5795,-0.2610) .. ( 0.5253,-0.3384)
3922 .. controls ( 0.5089,-0.3248) and ( 0.4943,-0.3128) .. ( 0.4825,-0.3113)
3923 --cycle
3924 ( 0.6371,-0.3426)
3925 .. controls ( 0.6165,-0.3414) and ( 0.6075,-0.3499) .. ( 0.6021,-0.3811)
3926 .. controls ( 0.6375,-0.3781) and ( 0.6440,-0.3786) .. ( 0.6618,-0.3470)
3927 .. controls ( 0.6521,-0.3447) and ( 0.6439,-0.3431) .. ( 0.6371,-0.3426)
3928 --cycle
3929 ( 0.1158,-0.3640)
3930 -- ( 0.1073,-0.3981)
3931 -- ( 0.1415,-0.3981)
3932 -- ( 0.1331,-0.3640)
3933 --cycle
3934 (-0.4660,-0.3701)
3935 .. controls (-0.4757,-0.3670) and (-0.4894,-0.3727) .. (-0.4983,-0.3981)
3936 -- (-0.5580,-0.3811)
3937 .. controls (-0.5508,-0.4276) and (-0.5277,-0.4685) .. (-0.4812,-0.4833)
3938 -- (-0.4898,-0.4066)
3939 .. controls (-0.4444,-0.4042) and (-0.4498,-0.3750) .. (-0.4660,-0.3701)
3940 --cycle
3941 ( 0.1671,-0.3724)
3942 -- ( 0.1585,-0.3811)
3943 -- ( 0.1671,-0.4407)
3944 -- ( 0.1927,-0.4322)
3945 -- ( 0.1927,-0.3811)
3946 -- ( 0.1841,-0.3724)
3947 --cycle
3948 (-0.4061,-0.3746)
3949 .. controls (-0.4337,-0.3682) and (-0.4432,-0.4275) .. (-0.3933,-0.4421)
3950 .. controls (-0.3807,-0.4474) and (-0.3733,-0.4433) .. (-0.3617,-0.4421)
3951 .. controls (-0.3654,-0.4287) and (-0.3677,-0.4184) .. (-0.3740,-0.4070)
3952 .. controls (-0.3858,-0.3861) and (-0.3969,-0.3767) .. (-0.4061,-0.3746)
3953 --cycle
3954 (-0.2091,-0.4066)

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3955 -- (-0.2091,-0.4298)
3956 -- (-0.1315,-0.5004)
3957 .. controls (-0.1221,-0.4446) and (-0.1606,-0.4228) .. (-0.2091,-0.4066)
3958 --cycle
3959 ( 0.6634,-0.4202)
3960 .. controls ( 0.6063,-0.4164) and ( 0.5403,-0.4628) .. ( 0.5936,-0.5175)
3961 .. controls ( 0.5533,-0.5676) and ( 0.6039,-0.5913) .. ( 0.6362,-0.5261)
3962 -- ( 0.6021,-0.5175)
3963 -- ( 0.6618,-0.5004)
3964 -- ( 0.6874,-0.5261)
3965 -- ( 0.6532,-0.4749)
3966 -- ( 0.6618,-0.4664)
3967 .. controls ( 0.6767,-0.4763) and ( 0.6924,-0.4939) .. ( 0.7031,-0.4938)
3968 .. controls ( 0.7482,-0.4516) and ( 0.7588,-0.4217) .. ( 0.6869,-0.4249)
3969 .. controls ( 0.6795,-0.4222) and ( 0.6716,-0.4207) .. ( 0.6634,-0.4202)
3970 --cycle
3971 (-0.2595,-0.4322)
3972 -- (-0.2680,-0.4407)
3973 -- (-0.2680,-0.4579)
3974 -- (-0.2595,-0.4664)
3975 -- (-0.2424,-0.4664)
3976 -- (-0.2338,-0.4579)
3977 -- (-0.2338,-0.4407)
3978 -- (-0.2424,-0.4322)
3979 --cycle
3980 (-0.3947,-0.4820)
3981 .. controls (-0.4064,-0.4819) and (-0.4202,-0.4884) .. (-0.4300,-0.4906)
3982 .. controls (-0.4705,-0.5000) and (-0.4926,-0.4888) .. (-0.4812,-0.5431)
3983 .. controls (-0.4962,-0.5405) and (-0.5172,-0.5356) .. (-0.5319,-0.5380)
3984 .. controls (-0.5497,-0.5409) and (-0.6218,-0.5786) .. (-0.6276,-0.5954)
3985 .. controls (-0.6443,-0.6458) and (-0.5896,-0.6294) .. (-0.5665,-0.6198)
3986 -- (-0.5750,-0.6455)
3987 -- (-0.5409,-0.6540)
3988 -- (-0.5409,-0.6198)
3989 -- (-0.4727,-0.5943)
3990 -- (-0.4812,-0.6370)
3991 -- (-0.4641,-0.6028)
3992 -- (-0.4214,-0.6796)
3993 -- (-0.4044,-0.6796)
3994 .. controls (-0.3922,-0.6110) and (-0.4199,-0.5974) .. (-0.4386,-0.5431)
3995 -- (-0.4053,-0.5384)
3996 .. controls (-0.3682,-0.5271) and (-0.3698,-0.4934) .. (-0.3840,-0.4848)
3997 .. controls (-0.3872,-0.4829) and (-0.3908,-0.4821) .. (-0.3947,-0.4820)
3998 --cycle
3999 (-0.2509,-0.4833)
4000 .. controls (-0.2897,-0.5056) and (-0.2886,-0.5289) .. (-0.2509,-0.5516)
4001 -- (-0.2509,-0.5688)
4002 .. controls (-0.3046,-0.5780) and (-0.3807,-0.5721) .. (-0.3362,-0.6796)
4003 .. controls (-0.3905,-0.7060) and (-0.4127,-0.7567) .. (-0.3447,-0.7820)
4004 -- (-0.3305,-0.8084)
4005 .. controls (-0.3952,-0.8150) and (-0.4330,-0.7851) .. (-0.3796,-0.8551)
4006 .. controls (-0.3707,-0.8560) and (-0.2665,-0.8846) .. (-0.3191,-0.8587)
4007 .. controls (-0.2670,-0.8376) and (-0.2955,-0.8083) .. (-0.3191,-0.7735)

```

```

4008 .. controls (-0.2852,-0.7626) and (-0.2805,-0.7579) .. (-0.2850,-0.7222)
4009 -- (-0.3277,-0.7393)
4010 -- (-0.3277,-0.6796)
4011 .. controls (-0.2965,-0.6680) and (-0.3000,-0.6597) .. (-0.3020,-0.6285)
4012 .. controls (-0.2349,-0.6402) and (-0.2059,-0.6119) .. (-0.1513,-0.6666)
4013 .. controls (-0.1144,-0.7033) and (-0.1214,-0.7764) .. (-0.0716,-0.7828)
4014 .. controls (-0.0398,-0.7870) and (-0.0581,-0.7438) .. (-0.0633,-0.7307)
4015 .. controls (-0.0105,-0.7419) and (-0.0101,-0.7107) .. (-0.0259,-0.6944)
4016 .. controls (-0.0416,-0.6781) and (-0.0638,-0.6847) .. (-0.0920,-0.6613)
4017 .. controls (-0.1363,-0.6245) and (-0.1312,-0.5893) .. (-0.2253,-0.5516)
4018 --cycle
4019 ( 0.0893,-0.4928)
4020 .. controls ( 0.0854,-0.4941) and ( 0.0816,-0.4977) .. ( 0.0781,-0.5045)
4021 .. controls ( 0.0717,-0.5167) and ( 0.0733,-0.5538) .. ( 0.0733,-0.5688)
4022 .. controls (-0.0068,-0.5661) and ( 0.0229,-0.6522) .. ( 0.0360,-0.6661)
4023 .. controls ( 0.0456,-0.6761) and ( 0.0531,-0.6759) .. ( 0.0647,-0.6796)
4024 -- ( 0.0647,-0.6198)
4025 -- ( 0.1244,-0.6113)
4026 -- ( 0.1073,-0.5773)
4027 -- ( 0.1331,-0.5688)
4028 .. controls ( 0.1502,-0.5983) and ( 0.1514,-0.6011) .. ( 0.1841,-0.6113)
4029 .. controls ( 0.1815,-0.5647) and ( 0.1767,-0.5414) .. ( 0.1244,-0.5431)
4030 -- ( 0.1174,-0.5185)
4031 .. controls ( 0.1127,-0.5047) and ( 0.1008,-0.4886) .. ( 0.0893,-0.4928)
4032 --cycle
4033 ( 0.0647,-0.6796)
4034 .. controls ( 0.0651,-0.7162) and ( 0.0755,-0.7152) .. ( 0.1073,-0.7052)
4035 .. controls ( 0.0927,-0.6800) and ( 0.0939,-0.6798) .. ( 0.0647,-0.6796)
4036 --cycle
4037 ( 0.4429,-0.5307)
4038 .. controls ( 0.4305,-0.5311) and ( 0.4171,-0.5380) .. ( 0.4059,-0.5558)
4039 .. controls ( 0.3999,-0.5655) and ( 0.3989,-0.5750) .. ( 0.3994,-0.5861)
4040 .. controls ( 0.3998,-0.5978) and ( 0.4033,-0.6088) .. ( 0.4059,-0.6198)
4041 .. controls ( 0.4351,-0.6096) and ( 0.4347,-0.6075) .. ( 0.4400,-0.5773)
4042 .. controls ( 0.5088,-0.5860) and ( 0.4802,-0.5296) .. ( 0.4429,-0.5307)
4043 --cycle
4044 ( 0.6296,-0.5636)
4045 .. controls ( 0.6201,-0.5648) and ( 0.6129,-0.5872) .. ( 0.5850,-0.6007)
4046 .. controls ( 0.5662,-0.6071) and ( 0.5466,-0.6101) .. ( 0.5358,-0.6303)
4047 .. controls ( 0.5238,-0.6524) and ( 0.5014,-0.6717) .. ( 0.5092,-0.6929)
4048 .. controls ( 0.4879,-0.7051) and ( 0.4594,-0.7105) .. ( 0.4574,-0.7383)
4049 .. controls ( 0.4557,-0.7622) and ( 0.5198,-0.8058) .. ( 0.5459,-0.7885)
4050 .. controls ( 0.5602,-0.7791) and ( 0.4924,-0.7612) .. ( 0.5176,-0.7262)
4051 -- ( 0.5713,-0.7309)
4052 .. controls ( 0.6461,-0.7123) and ( 0.5265,-0.6556) .. ( 0.6262,-0.6344)
4053 .. controls ( 0.6303,-0.6340) and ( 0.6389,-0.6314) .. ( 0.6474,-0.6278)
4054 -- ( 0.6629,-0.6006)
4055 .. controls ( 0.6611,-0.5976) and ( 0.6583,-0.5944) .. ( 0.6541,-0.5908)
4056 .. controls ( 0.6418,-0.5698) and ( 0.6353,-0.5628) .. ( 0.6296,-0.5636)
4057 --cycle
4058 ( 0.2723,-0.5991)
4059 .. controls ( 0.2592,-0.6003) and ( 0.2468,-0.6028) .. ( 0.2363,-0.6064)
4060 .. controls ( 0.1997,-0.6189) and ( 0.1915,-0.6622) .. ( 0.2438,-0.6796)

```

```

4061 -- ( 0.2524,-0.6540)
4062 -- ( 0.2694,-0.6540)
4063 -- ( 0.2438,-0.6796)
4064 -- ( 0.2352,-0.7052)
4065 .. controls ( 0.1815,-0.6689) and ( 0.1445,-0.7418) .. ( 0.2182,-0.7649)
4066 .. controls ( 0.2103,-0.7956) and ( 0.2084,-0.7983) .. ( 0.2267,-0.8246)
4067 .. controls ( 0.1155,-0.7748) and ( 0.1095,-0.9097) .. ( 0.1942,-0.8505)
4068 -- ( 0.2141,-0.8675)
4069 .. controls ( 0.2535,-0.8323) and ( 0.2056,-0.8655) .. ( 0.2756,-0.8643)
4070 -- ( 0.2903,-0.8720)
4071 -- ( 0.3279,-0.8720)
4072 -- ( 0.3427,-0.8612)
4073 .. controls ( 0.3869,-0.8663) and ( 0.4661,-0.8748) .. ( 0.4741,-0.8502)
4074 .. controls ( 0.5431,-0.8855) and ( 0.5233,-0.7888) .. ( 0.5039,-0.8143)
4075 .. controls ( 0.4752,-0.7958) and ( 0.5046,-0.8131) .. ( 0.4741,-0.8331)
4076 .. controls ( 0.3949,-0.7997) and ( 0.4522,-0.8406) .. ( 0.3683,-0.8327)
4077 .. controls ( 0.3744,-0.7942) and ( 0.4288,-0.7829) .. ( 0.4051,-0.7307)
4078 .. controls ( 0.4260,-0.7007) and ( 0.4185,-0.6946) .. ( 0.4051,-0.6626)
4079 .. controls ( 0.3990,-0.6503) and ( 0.3940,-0.6359) .. ( 0.3839,-0.6265)
4080 .. controls ( 0.3585,-0.6027) and ( 0.3119,-0.5953) .. ( 0.2723,-0.5991)
4081 --cycle
4082 (-0.2424,-0.6455)
4083 -- (-0.2424,-0.6796)
4084 -- (-0.1997,-0.6711)
4085 -- (-0.1997,-0.6540)
4086 --cycle
4087 ( 0.2950,-0.6455)
4088 .. controls ( 0.3615,-0.6477) and ( 0.3567,-0.6705) .. ( 0.3974,-0.7222)
4089 .. controls ( 0.3592,-0.8249) and ( 0.3353,-0.7947) .. ( 0.2609,-0.7990)
4090 -- ( 0.2438,-0.7649)
4091 .. controls ( 0.2681,-0.7474) and ( 0.2638,-0.7424) .. ( 0.2609,-0.7137)
4092 -- ( 0.2950,-0.6881)
4093 .. controls ( 0.3035,-0.6916) and ( 0.3102,-0.6959) .. ( 0.3198,-0.6974)
4094 .. controls ( 0.3496,-0.7020) and ( 0.3487,-0.6665) .. ( 0.3120,-0.6881)
4095 --cycle
4096 (-0.6122,-0.6460)
4097 .. controls (-0.6202,-0.6484) and (-0.6222,-0.6534) .. (-0.6220,-0.6591)
4098 -- (-0.6084,-0.6829)
4099 .. controls (-0.6039,-0.6880) and (-0.6001,-0.6940) .. (-0.5958,-0.6974)
4100 .. controls (-0.5822,-0.7078) and (-0.5979,-0.7175) .. (-0.5836,-0.7137)
4101 -- (-0.5557,-0.7397)
4102 .. controls (-0.5863,-0.7181) and (-0.4852,-0.7770) .. (-0.5233,-0.7812)
4103 .. controls (-0.4643,-0.7650) and (-0.4542,-0.8172) .. (-0.4400,-0.7940)
4104 .. controls (-0.4310,-0.7794) and (-0.4454,-0.7672) .. (-0.4569,-0.7609)
4105 .. controls (-0.5042,-0.7356) and (-0.5468,-0.7364) .. (-0.5580,-0.6711)
4106 .. controls (-0.5740,-0.6662) and (-0.5960,-0.6410) .. (-0.6122,-0.6460)
4107 --cycle
4108 (-0.2799,-0.6723)
4109 .. controls (-0.2946,-0.6977) and (-0.2726,-0.7009) .. (-0.2645,-0.6954)
4110 .. controls (-0.2563,-0.6899) and (-0.2508,-0.6683) .. (-0.2799,-0.6723)
4111 --cycle
4112 (-0.1741,-0.6796)
4113 -- (-0.1826,-0.6881)

```

```

4114 -- (-0.1826,-0.7052)
4115 -- (-0.1571,-0.6796)
4116 --cycle
4117 ( 0.0647,-0.7393)
4118 -- ( 0.0733,-0.7735)
4119 -- ( 0.0902,-0.7735)
4120 -- ( 0.0988,-0.7649)
4121 -- ( 0.0988,-0.7478)
4122 --cycle
4123 ( 0.2267,-0.7564)
4124 -- ( 0.2352,-0.7564)
4125 -- ( 0.2352,-0.7649)
4126 --cycle
4127 (-0.2765,-0.7649)
4128 -- (-0.2850,-0.7990)
4129 -- (-0.2509,-0.7905)
4130 -- (-0.2595,-0.7649)
4131 --cycle
4132 (-0.1620,-0.7999)
4133 .. controls (-0.1665,-0.7994) and (-0.1723,-0.7994) .. (-0.1792,-0.8003)
4134 .. controls (-0.2378,-0.8436) and (-0.2549,-0.8217) .. (-0.2658,-0.8441)
4135 .. controls (-0.2799,-0.8733) and (-0.2098,-0.8685) .. (-0.1746,-0.8466)
4136 .. controls (-0.1557,-0.8347) and (-0.1302,-0.8033) .. (-0.1620,-0.7999)
4137 --cycle
4138 (-0.0021,-0.8033)
4139 .. controls (-0.0289,-0.7979) and (-0.0697,-0.8240) .. (-0.0817,-0.8284)
4140 .. controls (-0.1018,-0.8361) and (-0.1245,-0.8333) .. (-0.1384,-0.8539)
4141 .. controls (-0.1534,-0.8760) and (-0.1093,-0.8641) .. (-0.0866,-0.8639)
4142 .. controls (-0.0704,-0.8637) and (-0.0573,-0.8695) .. (-0.0331,-0.8549)
4143 .. controls ( 0.0004,-0.8348) and (-0.0157,-0.8559) .. ( 0.0221,-0.8587)
4144 .. controls ( 0.0252,-0.8212) and ( 0.0141,-0.8066) .. (-0.0021,-0.8033)
4145 --cycle
4146 ( 0.1096,-0.8160)
4147 .. controls ( 0.1044,-0.8138) and ( 0.0965,-0.8137) .. ( 0.0850,-0.8167)
4148 .. controls ( 0.0624,-0.8514) and ( 0.0794,-0.8648) .. ( 0.0988,-0.8546)
4149 .. controls ( 0.1148,-0.8462) and ( 0.1249,-0.8224) .. ( 0.1096,-0.8160)
4150 --cycle
4151 (-0.4386,-0.8161)
4152 -- (-0.4386,-0.8587)
4153 .. controls (-0.3929,-0.8508) and (-0.3929,-0.8240) .. (-0.4386,-0.8161)
4154 --cycle
4155 (-0.4898,-0.8246)
4156 -- (-0.5227,-0.8312)
4157 -- (-0.5082,-0.8563)
4158 .. controls (-0.5034,-0.8573) and (-0.4999,-0.8586) .. (-0.4898,-0.8587)
4159 -- (-0.4878,-0.8720)
4160 -- (-0.4837,-0.8720)
4161 -- (-0.4565,-0.8673)
4162 --cycle
4163 ;
4164 }
4165 }
4166 \fi

```

hex/terrain/swamp

The pattern for swamps. The pattern is filled with a light blue.

```
4167 \tikzset{
4168   hex/terrain/swamp/.style={
4169     draw=none,
4170     fill={rgb,100:red,26;green,55;blue,70}
4171   }
4172 }
```

hex/terrain/swamp

Swamps. This is probably the shortest of the terrain patterns.



```
4173 \ifhex@terrain@pic
4174 \tikzset{
4175   hex/terrain/swamp/.pic={
4176     \path[hex/terrain/swamp,pic actions,draw=none]
4177       (-0.5026, 0.8699)
4178       -- (-0.5041, 0.8672)
4179       .. controls (-0.3586, 0.8441) and (-0.1148, 0.8722) .. ( 0.0006, 0.8697)
4180       -- ( 0.2386, 0.8529)
4181       -- ( 0.2386, 0.8699)
4182       --cycle
4183       ( 0.4257, 0.8699)
4184       -- ( 0.4257, 0.8529)
4185       -- ( 0.5112, 0.8558)
4186       -- ( 0.5033, 0.8699)
4187       --cycle
4188       ( 0.3067, 0.8359)
4189       -- ( 0.2897, 0.7848)
4190       -- ( 0.2726, 0.8188)
4191       -- ( 0.2556, 0.8188)
4192       -- ( 0.2217, 0.7509)
4193       -- ( 0.5719, 0.7509)
4194       -- ( 0.5621, 0.7679)
4195       -- ( 0.5617, 0.7679)
4196       -- ( 0.3746, 0.7848)
4197       -- ( 0.3746, 0.8359)
4198       --cycle
4199       (-0.3225, 0.7848)
4200       -- (-0.3225, 0.7509)
4201       -- ( 0.0856, 0.7509)
4202       -- ( 0.0856, 0.7848)
4203       --cycle
4204       (-0.5555, 0.7782)
```

```

4205 -- (-0.5713, 0.7509)
4206 -- (-0.5097, 0.7509)
4207 --cycle
4208 ( 0.2789, 0.6696)
4209 .. controls ( 0.2234, 0.6713) and ( 0.1659, 0.6658) .. ( 0.1195, 0.6658)
4210 -- (-0.6117, 0.6658)
4211 -- (-0.6117, 0.6318)
4212 -- ( 0.4257, 0.6318)
4213 .. controls ( 0.3878, 0.6597) and ( 0.3344, 0.6681) .. ( 0.2789, 0.6696)
4214 --cycle
4215 ( 0.6297, 0.6318)
4216 -- ( 0.6297, 0.5468)
4217 -- ( 0.5617, 0.5807)
4218 .. controls ( 0.5449, 0.5387) and ( 0.5194, 0.5474) .. ( 0.4764, 0.5468)
4219 -- ( 0.2047, 0.5468)
4220 .. controls ( 0.2857, 0.5146) and ( 0.5508, 0.5135) .. ( 0.7089, 0.5136)
4221 -- ( 0.6740, 0.5740)
4222 -- ( 0.6638, 0.5637)
4223 --cycle
4224 (-0.6684, 0.5591)
4225 .. controls (-0.6731, 0.5588) and (-0.6784, 0.5577) .. (-0.6832, 0.5571)
4226 -- (-0.6990, 0.5298)
4227 -- (-0.5777, 0.5298)
4228 .. controls (-0.6139, 0.5561) and (-0.6407, 0.5608) .. (-0.6684, 0.5591)
4229 --cycle
4230 (-0.3396, 0.5468)
4231 .. controls (-0.2194, 0.4991) and (-0.1285, 0.5826) .. (-0.0845, 0.4447)
4232 -- (-0.1525, 0.4957)
4233 -- (-0.1525, 0.4277)
4234 .. controls (-0.0482, 0.4023) and ( 0.2732, 0.3989) .. ( 0.3746, 0.4277)
4235 .. controls ( 0.2597, 0.4733) and ( 0.2397, 0.4045) .. ( 0.1026, 0.4957)
4236 -- ( 0.0686, 0.4617)
4237 -- ( 0.0516, 0.4617)
4238 -- ( 0.0686, 0.5298)
4239 -- ( 0.0006, 0.4447)
4240 -- ( 0.0006, 0.5468)
4241 --cycle
4242 (-0.0675, 0.5127)
4243 -- (-0.0164, 0.5127)
4244 -- (-0.0505, 0.4447)
4245 --cycle
4246 (-0.7435, 0.4527)
4247 -- (-0.7580, 0.4277)
4248 -- (-0.6797, 0.4277)
4249 .. controls (-0.6982, 0.4394) and (-0.7200, 0.4471) .. (-0.7435, 0.4527)
4250 --cycle
4251 (-0.5266, 0.4447)
4252 .. controls (-0.4681, 0.4018) and (-0.4413, 0.4086) .. (-0.3736, 0.4277)
4253 --cycle
4254 ( 0.5787, 0.4277)
4255 -- ( 0.5447, 0.3257)
4256 -- ( 0.5108, 0.3257)
4257 -- ( 0.4597, 0.4107)

```

```

4258 -- ( 0.4597, 0.3257)
4259 -- ( 0.4257, 0.3937)
4260 -- ( 0.4087, 0.3257)
4261 -- ( 0.2897, 0.3257)
4262 .. controls ( 0.3725, 0.2928) and ( 0.6913, 0.3087) .. ( 0.7998, 0.3087)
4263 .. controls ( 0.7426, 0.3376) and ( 0.7264, 0.3382) .. ( 0.6638, 0.3257)
4264 -- ( 0.6638, 0.3767)
4265 -- ( 0.5787, 0.3257)
4266 --cycle
4267 (-0.7817, 0.3257)
4268 -- (-0.7137, 0.2407)
4269 -- (-0.7988, 0.2746)
4270 .. controls (-0.8162, 0.2534) and (-0.8404, 0.2432) .. (-0.8672, 0.2385)
4271 -- (-0.8857, 0.2066)
4272 -- (-0.6627, 0.2066)
4273 .. controls (-0.5059, 0.2059) and (-0.2690, 0.1655) .. (-0.1185, 0.2066)
4274 .. controls (-0.2358, 0.2532) and (-0.4834, 0.1773) .. (-0.5607, 0.2746)
4275 -- (-0.6287, 0.2237)
4276 -- (-0.6457, 0.2407)
4277 .. controls (-0.5823, 0.3108) and (-0.5667, 0.3074) .. (-0.4756, 0.3087)
4278 --cycle
4279 ( 0.8338, 0.2576)
4280 -- ( 0.7998, 0.2066)
4281 -- ( 0.8906, 0.1990)
4282 -- ( 0.8567, 0.2576)
4283 --cycle
4284 (-0.0164, 0.2237)
4285 .. controls ( 0.0715, 0.1799) and ( 0.3189, 0.1896) .. ( 0.4257, 0.1896)
4286 -- ( 0.4257, 0.2237)
4287 --cycle
4288 (-0.2716, 0.1216)
4289 -- (-0.2716, 0.0876)
4290 -- ( 0.1501, 0.0876)
4291 -- ( 0.1434, 0.1042)
4292 -- ( 0.0345, 0.1216)
4293 --cycle
4294 ( 0.1501, 0.0876)
4295 -- ( 0.1536, 0.0789)
4296 -- ( 0.1536, 0.0876)
4297 --cycle
4298 ( 0.1536, 0.0789)
4299 -- ( 0.1536, 0.0196)
4300 -- ( 0.0856, 0.0534)
4301 -- ( 0.0686,-0.0145)
4302 -- ( 0.7658,-0.0145)
4303 .. controls ( 0.6332, 0.0380) and ( 0.4479,-0.0524) .. ( 0.3406, 0.0534)
4304 -- ( 0.3236, 0.0534)
4305 -- ( 0.2897, 0.0196)
4306 -- ( 0.2897, 0.0876)
4307 -- ( 0.2556, 0.0196)
4308 -- ( 0.2386, 0.0876)
4309 -- ( 0.1705, 0.0365)
4310 --cycle

```

```

4311 ( 0.3917, 0.1216)
4312 -- ( 0.3917, 0.0876)
4313 -- ( 0.8678, 0.0876)
4314 .. controls ( 0.7768, 0.1266) and ( 0.5022, 0.1216) .. ( 0.3917, 0.1216)
4315 --cycle
4316 (-0.9351, 0.1208)
4317 -- (-0.9518, 0.0921)
4318 -- (-0.9518, 0.0876)
4319 -- (-0.6117, 0.1045)
4320 --cycle
4321 (-0.9144, 0.0213)
4322 .. controls (-0.9468, 0.0204) and (-0.9775, 0.0109) .. (-0.9996,-0.0116)
4323 -- (-0.9982,-0.0141)
4324 -- (-0.8158, 0.0026)
4325 .. controls (-0.8449, 0.0142) and (-0.8804, 0.0222) .. (-0.9144, 0.0213)
4326 --cycle
4327 (-0.6287, 0.0196)
4328 .. controls (-0.5470,-0.0404) and (-0.2796,-0.0145) .. (-0.1695,-0.0145)
4329 -- (-0.1695, 0.0196)
4330 --cycle
4331 (-0.9488,-0.0996)
4332 -- (-0.9292,-0.1335)
4333 -- (-0.4756,-0.1335)
4334 -- (-0.4756,-0.0996)
4335 --cycle
4336 (-0.2886,-0.0996)
4337 -- (-0.2886,-0.1335)
4338 -- ( 0.2726,-0.1335)
4339 .. controls ( 0.2164,-0.0920) and ( 0.1871,-0.0997) .. ( 0.1195,-0.0996)
4340 --cycle
4341 ( 0.5478,-0.1025)
4342 .. controls ( 0.5070,-0.1018) and ( 0.4651,-0.1086) .. ( 0.4257,-0.1165)
4343 -- ( 0.6638,-0.1335)
4344 .. controls ( 0.6286,-0.1113) and ( 0.5887,-0.1031) .. ( 0.5478,-0.1025)
4345 --cycle
4346 ( 0.8928,-0.1132)
4347 .. controls ( 0.8481,-0.1114) and ( 0.8007,-0.1165) .. ( 0.7658,-0.1165)
4348 -- ( 0.9264,-0.1394)
4349 -- ( 0.9384,-0.1186)
4350 .. controls ( 0.9238,-0.1157) and ( 0.9087,-0.1137) .. ( 0.8928,-0.1132)
4351 --cycle
4352 (-0.2982,-0.2002)
4353 .. controls (-0.3469,-0.2010) and (-0.3950,-0.2053) .. (-0.4416,-0.2185)
4354 -- (-0.0505,-0.2355)
4355 -- ( 0.7827,-0.2355)
4356 .. controls ( 0.6739,-0.1909) and ( 0.4335,-0.2017) .. ( 0.3067,-0.2016)
4357 -- (-0.1525,-0.2016)
4358 .. controls (-0.2005,-0.2016) and (-0.2496,-0.1992) .. (-0.2982,-0.2002)
4359 --cycle
4360 (-0.8328,-0.2016)
4361 .. controls (-0.7894,-0.2498) and (-0.7244,-0.2355) .. (-0.6627,-0.2355)
4362 -- (-0.6627,-0.3034)
4363 -- (-0.6967,-0.2696)

```

```

4364 -- (-0.7137,-0.2696)
4365 .. controls (-0.7385,-0.3064) and (-0.7772,-0.3191) .. (-0.8200,-0.3227)
4366 -- (-0.8113,-0.3377)
4367 .. controls (-0.6682,-0.3440) and (-0.4684,-0.3376) .. (-0.3906,-0.3376)
4368 -- (-0.4586,-0.2696)
4369 -- (-0.5266,-0.3034)
4370 -- (-0.5097,-0.2355)
4371 -- (-0.5607,-0.3206)
4372 -- (-0.5777,-0.2355)
4373 -- (-0.6457,-0.3034)
4374 -- (-0.6287,-0.2185)
4375 --cycle
4376 ( 0.8169,-0.2866)
4377 -- ( 0.7489,-0.3206)
4378 .. controls ( 0.7652,-0.3284) and ( 0.7871,-0.3345) .. ( 0.8114,-0.3386)
4379 -- ( 0.8324,-0.3020)
4380 --cycle
4381 ( 0.2076,-0.3170)
4382 .. controls ( 0.0913,-0.3168) and (-0.0288,-0.3206) .. (-0.0845,-0.3206)
4383 -- ( 0.2509,-0.3621)
4384 -- ( 0.2897,-0.4056)
4385 -- ( 0.2556,-0.3716)
4386 -- ( 0.2386,-0.3716)
4387 -- ( 0.2386,-0.4566)
4388 -- ( 0.4257,-0.4566)
4389 -- ( 0.3746,-0.3716)
4390 -- ( 0.3067,-0.4226)
4391 -- ( 0.3067,-0.3547)
4392 -- ( 0.4766,-0.3376)
4393 .. controls ( 0.4363,-0.3215) and ( 0.3237,-0.3172) .. ( 0.2076,-0.3170)
4394 --cycle
4395 (-0.7622,-0.4226)
4396 -- (-0.7427,-0.4566)
4397 -- (-0.5607,-0.4566)
4398 -- (-0.5607,-0.4226)
4399 --cycle
4400 (-0.3396,-0.4226)
4401 -- (-0.3396,-0.4566)
4402 -- (-0.0164,-0.4566)
4403 -- (-0.0164,-0.4226)
4404 --cycle
4405 ( 0.5787,-0.4226)
4406 .. controls ( 0.6179,-0.4661) and ( 0.6835,-0.4595) .. ( 0.7407,-0.4607)
4407 -- ( 0.7528,-0.4400)
4408 .. controls ( 0.6947,-0.4396) and ( 0.6370,-0.4368) .. ( 0.5787,-0.4226)
4409 --cycle
4410 (-0.2496,-0.5239)
4411 .. controls (-0.2827,-0.5212) and (-0.3176,-0.5246) .. (-0.3566,-0.5246)
4412 -- (-0.7034,-0.5246)
4413 -- (-0.6873,-0.5524)
4414 .. controls (-0.6429,-0.5639) and (-0.5972,-0.5587) .. (-0.5436,-0.5587)
4415 -- (-0.1525,-0.5587)
4416 .. controls (-0.1848,-0.5349) and (-0.2163,-0.5263) .. (-0.2496,-0.5239)

```

```

4417 --cycle
4418 (-0.0164,-0.5417)
4419 .. controls ( 0.0514,-0.5917) and ( 0.1065,-0.5717) .. ( 0.1876,-0.5736)
4420 .. controls ( 0.2932,-0.5761) and ( 0.5300,-0.5848) .. ( 0.6766,-0.5720)
4421 -- ( 0.6872,-0.5538)
4422 -- ( 0.4937,-0.5417)
4423 --cycle
4424 (-0.6255,-0.6593)
4425 -- (-0.6248,-0.6607)
4426 -- (-0.6117,-0.6607)
4427 --cycle
4428 (-0.5777,-0.6607)
4429 -- (-0.5777,-0.7287)
4430 -- (-0.5856,-0.7287)
4431 -- (-0.5659,-0.7627)
4432 -- (-0.3906,-0.7627)
4433 -- (-0.1695,-0.7627)
4434 -- (-0.4246,-0.7287)
4435 -- (-0.4076,-0.6607)
4436 -- (-0.4416,-0.7287)
4437 -- (-0.4756,-0.7287)
4438 -- (-0.4756,-0.6607)
4439 -- (-0.5097,-0.6607)
4440 -- (-0.5097,-0.7287)
4441 --cycle
4442 ( 0.0686,-0.7457)
4443 .. controls ( 0.1464,-0.8028) and ( 0.3428,-0.7798) .. ( 0.4427,-0.7798)
4444 -- ( 0.4427,-0.7457)
4445 --cycle
4446 (-0.3736,-0.8478)
4447 -- (-0.3736,-0.8722)
4448 -- (-0.2203,-0.8722)
4449 .. controls (-0.2708,-0.8419) and (-0.3097,-0.8478) .. (-0.3736,-0.8478)
4450 --cycle
4451 (-0.0172,-0.8544)
4452 .. controls (-0.0398,-0.8556) and (-0.0623,-0.8586) .. (-0.0845,-0.8648)
4453 .. controls (-0.0753,-0.8684) and (-0.0664,-0.8700) .. (-0.0573,-0.8722)
4454 -- ( 0.5033,-0.8722)
4455 -- ( 0.5088,-0.8626)
4456 .. controls ( 0.3892,-0.8602) and ( 0.2527,-0.8649) .. ( 0.1876,-0.8648)
4457 .. controls ( 0.1186,-0.8647) and ( 0.0502,-0.8509) .. (-0.0172,-0.8544)
4458 --cycle
4459 ;
4460 }
4461 }
4462 \fi

```

hex/terrain/rough

The style for rough hexes. The pattern is filled with a light brown, and outlines are not drawn.

```

4463 \tikzset{
4464   hex/terrain/rough/.style={
4465     draw=none,

```

```

4466     fill={rgb,100:red,79;green,68;blue,41}
4467   }
4468 }

```

hex/terrain/rough

Roughs. Again, a bit long.



```

4469 \ifhex@terrain@pic
4470 \tikzset{
4471   hex/terrain/rough/.pic={
4472     \path[hex/terrain/rough,pic actions,draw=none]
4473       (-0.2701, 0.8873)
4474       .. controls (-0.2982, 0.8927) and (-0.3250, 0.8675) .. (-0.3296, 0.8537)
4475       .. controls (-0.3363, 0.8337) and (-0.3058, 0.8263) .. (-0.2820, 0.8610)
4476       .. controls (-0.2717, 0.8450) and (-0.2591, 0.8228) .. (-0.2441, 0.8112)
4477       .. controls (-0.2057, 0.7817) and (-0.1394, 0.7709) .. (-0.1208, 0.8270)
4478       -- (-0.2226, 0.8355)
4479       .. controls (-0.2359, 0.8698) and (-0.2532, 0.8840) .. (-0.2701, 0.8873)
4480       --cycle
4481       (-0.1081, 0.8792)
4482       .. controls (-0.1371, 0.8680) and (-0.1265, 0.8900) .. (-0.1377, 0.8610)
4483       .. controls (-0.1121, 0.8691) and (-0.1163, 0.8536) .. (-0.1081, 0.8792)
4484       --cycle
4485       ( 0.1762, 0.8752)
4486       -- ( 0.1761, 0.8710)
4487       .. controls ( 0.1746, 0.8556) and ( 0.1707, 0.8704) .. ( 0.1822, 0.8575)
4488       .. controls ( 0.1958, 0.8423) and ( 0.2514, 0.8065) .. ( 0.2435, 0.8694)
4489       --cycle
4490       ( 0.3216, 0.8740)
4491       .. controls ( 0.3061, 0.8744) and ( 0.2932, 0.8668) .. ( 0.2896, 0.8414)
4492       .. controls ( 0.2869, 0.8222) and ( 0.3049, 0.8110) .. ( 0.3122, 0.7930)
4493       -- ( 0.3292, 0.7930)
4494       -- ( 0.3377, 0.8440)
4495       -- ( 0.3874, 0.8438)
4496       -- ( 0.3702, 0.8584)
4497       .. controls ( 0.3556, 0.8652) and ( 0.3372, 0.8736) .. ( 0.3216, 0.8740)
4498       --cycle
4499       ( 0.4696, 0.8697)
4500       .. controls ( 0.4362, 0.8687) and ( 0.4116, 0.8113) .. ( 0.4594, 0.7865)
4501       -- ( 0.4565, 0.8238)
4502       -- ( 0.5034, 0.8485)
4503       .. controls ( 0.4927, 0.8641) and ( 0.4807, 0.8700) .. ( 0.4696, 0.8697)
4504       --cycle
4505       (-0.0783, 0.8695)
4506       -- (-0.0698, 0.8185)
4507       -- (-0.0528, 0.8185)

```

```

4508 .. controls (-0.0488, 0.8507) and (-0.0499, 0.8533) .. (-0.0783, 0.8695)
4509 --cycle
4510 ( 0.0321, 0.8695)
4511 .. controls (-0.0074, 0.8534) and (-0.0195, 0.8453) .. (-0.0104, 0.8015)
4512 .. controls ( 0.0252, 0.8183) and ( 0.0356, 0.8295) .. ( 0.0321, 0.8695)
4513 --cycle
4514 (-0.4155, 0.8596)
4515 .. controls (-0.4417, 0.8307) and (-0.4165, 0.8213) .. (-0.4032, 0.8284)
4516 .. controls (-0.3903, 0.8353) and (-0.3789, 0.8639) .. (-0.4155, 0.8596)
4517 --cycle
4518 (-0.4857, 0.8525)
4519 .. controls (-0.4972, 0.8321) and (-0.5172, 0.8207) .. (-0.5389, 0.8116)
4520 -- (-0.5595, 0.7763)
4521 .. controls (-0.5377, 0.7748) and (-0.5144, 0.7944) .. (-0.4942, 0.8100)
4522 -- (-0.4857, 0.7845)
4523 .. controls (-0.4503, 0.8051) and (-0.4552, 0.8169) .. (-0.4688, 0.8525)
4524 --cycle
4525 ( 0.1002, 0.8511)
4526 .. controls ( 0.0869, 0.8528) and ( 0.0769, 0.8478) .. ( 0.0696, 0.8260)
4527 -- ( 0.1509, 0.8185)
4528 -- ( 0.1509, 0.8355)
4529 .. controls ( 0.1302, 0.8408) and ( 0.1135, 0.8493) .. ( 0.1002, 0.8511)
4530 --cycle
4531 ( 0.2485, 0.8268)
4532 .. controls ( 0.2378, 0.8296) and ( 0.2250, 0.8213) .. ( 0.2103, 0.7930)
4533 .. controls ( 0.2410, 0.7676) and ( 0.2451, 0.7555) .. ( 0.2867, 0.7591)
4534 .. controls ( 0.2791, 0.7861) and ( 0.2665, 0.8220) .. ( 0.2485, 0.8268)
4535 --cycle
4536 (-0.3754, 0.8100)
4537 -- (-0.3754, 0.7930)
4538 -- (-0.3330, 0.7930)
4539 -- (-0.3330, 0.8100)
4540 --cycle
4541 ( 0.5066, 0.8010)
4542 -- ( 0.5131, 0.7667)
4543 -- ( 0.5443, 0.7538)
4544 -- ( 0.5566, 0.7611)
4545 -- ( 0.5392, 0.7958)
4546 --cycle
4547 (-0.4008, 0.7930)
4548 -- (-0.4348, 0.7591)
4549 --cycle
4550 ( 0.1509, 0.7930)
4551 -- ( 0.1254, 0.7676)
4552 .. controls ( 0.1432, 0.7361) and ( 0.1497, 0.7365) .. ( 0.1849, 0.7336)
4553 .. controls ( 0.1820, 0.7688) and ( 0.1824, 0.7753) .. ( 0.1509, 0.7930)
4554 --cycle
4555 ( 0.0301, 0.7854)
4556 .. controls ( 0.0240, 0.7861) and ( 0.0162, 0.7858) .. ( 0.0066, 0.7845)
4557 -- ( 0.0490, 0.7421)
4558 .. controls ( 0.0527, 0.7709) and ( 0.0486, 0.7831) .. ( 0.0301, 0.7854)
4559 --cycle
4560 (-0.2757, 0.7847)

```

```

4561 .. controls (-0.2819, 0.7857) and (-0.2896, 0.7857) .. (-0.2990, 0.7845)
4562 -- (-0.2820, 0.7411)
4563 .. controls (-0.3010, 0.7423) and (-0.3576, 0.7485) .. (-0.3704, 0.7411)
4564 .. controls (-0.3832, 0.7314) and (-0.3819, 0.7137) .. (-0.3644, 0.7089)
4565 .. controls (-0.3522, 0.7029) and (-0.3199, 0.7069) .. (-0.3075, 0.7089)
4566 .. controls (-0.2647, 0.7227) and (-0.2326, 0.7776) .. (-0.2757, 0.7847)
4567 --cycle
4568 ( 0.3631, 0.7676)
4569 -- ( 0.3122, 0.7479)
4570 .. controls ( 0.3064, 0.6995) and ( 0.3021, 0.7030) .. ( 0.3546, 0.7166)
4571 .. controls ( 0.3550, 0.6777) and ( 0.3499, 0.6644) .. ( 0.3886, 0.6488)
4572 .. controls ( 0.3854, 0.7398) and ( 0.3467, 0.6989) .. ( 0.3631, 0.7676)
4573 --cycle
4574 ( 0.5753, 0.7676)
4575 .. controls ( 0.5837, 0.7354) and ( 0.5927, 0.7219) .. ( 0.6097, 0.7131)
4576 -- ( 0.5796, 0.7669)
4577 .. controls ( 0.5781, 0.7670) and ( 0.5768, 0.7674) .. ( 0.5753, 0.7676)
4578 --cycle
4579 (-0.5536, 0.7591)
4580 -- (-0.5706, 0.7082)
4581 -- (-0.5621, 0.6997)
4582 -- (-0.5027, 0.6997)
4583 .. controls (-0.5136, 0.7365) and (-0.5192, 0.7422) .. (-0.5536, 0.7591)
4584 --cycle
4585 (-0.1361, 0.7534)
4586 .. controls (-0.1512, 0.7509) and (-0.1612, 0.7304) .. (-0.1462, 0.6912)
4587 -- (-0.0953, 0.7082)
4588 .. controls (-0.1007, 0.7406) and (-0.1210, 0.7560) .. (-0.1361, 0.7534)
4589 --cycle
4590 (-0.4655, 0.7519)
4591 .. controls (-0.4811, 0.7476) and (-0.4887, 0.7146) .. (-0.4551, 0.6911)
4592 .. controls (-0.4447, 0.6838) and (-0.4376, 0.6846) .. (-0.4263, 0.6827)
4593 -- (-0.4362, 0.7201)
4594 .. controls (-0.4440, 0.7466) and (-0.4562, 0.7544) .. (-0.4655, 0.7519)
4595 --cycle
4596 (-0.2311, 0.7421)
4597 -- (-0.2480, 0.7082)
4598 -- (-0.1971, 0.6827)
4599 -- (-0.2141, 0.7421)
4600 --cycle
4601 ( 0.4819, 0.7421)
4602 -- ( 0.5244, 0.7082)
4603 -- ( 0.5329, 0.7166)
4604 -- ( 0.5329, 0.7336)
4605 --cycle
4606 ( 0.4140, 0.7336)
4607 .. controls ( 0.4091, 0.6951) and ( 0.4180, 0.6863) .. ( 0.4565, 0.6912)
4608 --cycle
4609 ( 0.1000, 0.7166)
4610 .. controls ( 0.0969, 0.7064) and ( 0.0893, 0.6845) .. ( 0.0896, 0.6747)
4611 .. controls ( 0.0911, 0.6142) and ( 0.1603, 0.6571) .. ( 0.1849, 0.6658)
4612 -- ( 0.2260, 0.6725)
4613 .. controls ( 0.2381, 0.6766) and ( 0.2515, 0.6891) .. ( 0.2429, 0.7019)

```

```

4614 .. controls ( 0.2330, 0.7185) and ( 0.1897, 0.7058) .. ( 0.1756, 0.7019)
4615 -- ( 0.1339, 0.6827)
4616 --cycle
4617 ( 0.0321, 0.7082)
4618 -- (-0.0019, 0.6318)
4619 .. controls ( 0.0528, 0.6362) and ( 0.0992, 0.6731) .. ( 0.0321, 0.7082)
4620 --cycle
4621 ( 0.5074, 0.6997)
4622 .. controls ( 0.5090, 0.6563) and ( 0.5107, 0.6351) .. ( 0.5584, 0.6572)
4623 --cycle
4624 (-0.6116, 0.6867)
4625 -- (-0.6413, 0.6359)
4626 .. controls (-0.6321, 0.6229) and (-0.6158, 0.6171) .. (-0.6009, 0.6289)
4627 .. controls (-0.5820, 0.6437) and (-0.5846, 0.6623) .. (-0.5876, 0.6827)
4628 --cycle
4629 (-0.3414, 0.6742)
4630 .. controls (-0.3515, 0.6371) and (-0.3559, 0.6083) .. (-0.3075, 0.6148)
4631 -- (-0.3245, 0.6742)
4632 --cycle
4633 (-0.5112, 0.6657)
4634 -- (-0.5112, 0.6318)
4635 -- (-0.4772, 0.6233)
4636 -- (-0.5027, 0.5893)
4637 -- (-0.5027, 0.5808)
4638 -- (-0.4857, 0.5638)
4639 .. controls (-0.4400, 0.6074) and (-0.4373, 0.6597) .. (-0.5112, 0.6657)
4640 --cycle
4641 (-0.2905, 0.6657)
4642 .. controls (-0.2682, 0.6064) and (-0.2058, 0.5997) .. (-0.2141, 0.6657)
4643 --cycle
4644 (-0.0953, 0.6488)
4645 -- (-0.1547, 0.6403)
4646 -- (-0.1377, 0.5553)
4647 -- (-0.1208, 0.5553)
4648 .. controls (-0.0926, 0.5982) and (-0.0954, 0.5977) .. (-0.0953, 0.6488)
4649 --cycle
4650 ( 0.0915, 0.6403)
4651 .. controls ( 0.0497, 0.6269) and ( 0.0505, 0.6133) .. ( 0.0490, 0.5723)
4652 .. controls ( 0.0796, 0.5913) and ( 0.0822, 0.6066) .. ( 0.0915, 0.6403)
4653 --cycle
4654 ( 0.4310, 0.6403)
4655 .. controls ( 0.4211, 0.6043) and ( 0.4125, 0.5931) .. ( 0.4480, 0.5723)
4656 -- ( 0.4819, 0.6148)
4657 -- ( 0.4819, 0.6318)
4658 --cycle
4659 ( 0.5838, 0.6403)
4660 .. controls ( 0.5923, 0.5846) and ( 0.5925, 0.5918) .. ( 0.6362, 0.5668)
4661 -- ( 0.6521, 0.5663)
4662 -- ( 0.6615, 0.5890)
4663 .. controls ( 0.6340, 0.6304) and ( 0.6328, 0.6347) .. ( 0.5838, 0.6403)
4664 --cycle
4665 ( 0.2018, 0.6233)
4666 -- ( 0.2018, 0.5808)

```

```

4667 -- ( 0.2358, 0.5808)
4668 .. controls ( 0.2306, 0.6108) and ( 0.2301, 0.6119) .. ( 0.2018, 0.6233)
4669 --cycle
4670 ( 0.3200, 0.6175)
4671 .. controls ( 0.3147, 0.6171) and ( 0.3095, 0.6162) .. ( 0.3037, 0.6159)
4672 -- ( 0.3144, 0.5906)
4673 .. controls ( 0.3494, 0.5385) and ( 0.3913, 0.6066) .. ( 0.3367, 0.6159)
4674 .. controls ( 0.3306, 0.6176) and ( 0.3252, 0.6178) .. ( 0.3200, 0.6175)
4675 --cycle
4676 ( 0.1254, 0.6148)
4677 -- ( 0.1169, 0.5553)
4678 -- ( 0.1339, 0.5553)
4679 -- ( 0.1594, 0.5808)
4680 --cycle
4681 (-0.0188, 0.6063)
4682 .. controls (-0.0629, 0.5361) and (-0.0925, 0.5785) .. (-0.1038, 0.5044)
4683 -- (-0.0528, 0.4875)
4684 .. controls (-0.0307, 0.5232) and (-0.0275, 0.5285) .. ( 0.0151, 0.5299)
4685 .. controls ( 0.0257, 0.5724) and ( 0.0206, 0.5860) .. (-0.0188, 0.6063)
4686 --cycle
4687 (-0.2820, 0.5893)
4688 .. controls (-0.2753, 0.5073) and (-0.2107, 0.5185) .. (-0.1801, 0.5808)
4689 --cycle
4690 ( 0.5244, 0.5893)
4691 .. controls ( 0.5408, 0.5621) and ( 0.5447, 0.5620) .. ( 0.5753, 0.5553)
4692 .. controls ( 0.5625, 0.5873) and ( 0.5579, 0.5867) .. ( 0.5244, 0.5893)
4693 --cycle
4694 (-0.4023, 0.5839)
4695 .. controls (-0.4095, 0.5826) and (-0.4161, 0.5794) .. (-0.4210, 0.5751)
4696 .. controls (-0.4340, 0.5638) and (-0.4334, 0.5376) .. (-0.4348, 0.5214)
4697 .. controls (-0.3835, 0.5433) and (-0.4044, 0.5361) .. (-0.3499, 0.5299)
4698 .. controls (-0.3537, 0.5756) and (-0.3808, 0.5879) .. (-0.4023, 0.5839)
4699 --cycle
4700 (-0.6717, 0.5836)
4701 -- (-0.7007, 0.5338)
4702 .. controls (-0.6810, 0.5286) and (-0.6639, 0.5441) .. (-0.6717, 0.5836)
4703 --cycle
4704 (-0.5683, 0.5760)
4705 .. controls (-0.5775, 0.5769) and (-0.5875, 0.5722) .. (-0.6045, 0.5638)
4706 -- (-0.5876, 0.5214)
4707 -- (-0.5367, 0.5553)
4708 .. controls (-0.5506, 0.5688) and (-0.5590, 0.5752) .. (-0.5683, 0.5760)
4709 --cycle
4710 ( 0.2527, 0.5638)
4711 -- ( 0.2782, 0.5129)
4712 -- ( 0.2867, 0.5129)
4713 -- ( 0.3037, 0.5299)
4714 .. controls ( 0.2852, 0.5566) and ( 0.2848, 0.5585) .. ( 0.2527, 0.5638)
4715 --cycle
4716 ( 0.6946, 0.5616)
4717 .. controls ( 0.6944, 0.5600) and ( 0.6921, 0.5548) .. ( 0.6787, 0.5413)
4718 -- ( 0.6878, 0.5061)
4719 .. controls ( 0.6794, 0.4976) and ( 0.6747, 0.5161) .. ( 0.6694, 0.5045)

```

```

4720 -- ( 0.6262, 0.5469)
4721 .. controls ( 0.6001, 0.4510) and ( 0.6708, 0.4762) .. ( 0.6776, 0.4804)
4722 .. controls ( 0.6913, 0.4889) and ( 0.7003, 0.4848) .. ( 0.7078, 0.4982)
4723 -- ( 0.7283, 0.4862)
4724 -- ( 0.7151, 0.5087)
4725 -- ( 0.6995, 0.5381)
4726 .. controls ( 0.6915, 0.5505) and ( 0.6933, 0.5583) .. ( 0.6948, 0.5614)
4727 --cycle
4728 ( 0.1764, 0.5469)
4729 .. controls ( 0.1765, 0.5023) and ( 0.1718, 0.4964) .. ( 0.2018, 0.4620)
4730 -- ( 0.2443, 0.4790)
4731 .. controls ( 0.2287, 0.5015) and ( 0.2286, 0.4995) .. ( 0.2018, 0.4960)
4732 -- ( 0.1934, 0.5044)
4733 -- ( 0.1934, 0.5469)
4734 --cycle
4735 ( 0.3971, 0.5384)
4736 -- ( 0.4056, 0.5044)
4737 -- ( 0.4649, 0.4875)
4738 -- ( 0.4904, 0.5384)
4739 -- ( 0.4395, 0.5214)
4740 --cycle
4741 ( 0.5668, 0.5384)
4742 .. controls ( 0.5368, 0.5332) and ( 0.5357, 0.5327) .. ( 0.5244, 0.5044)
4743 -- ( 0.5329, 0.4960)
4744 -- ( 0.5668, 0.5044)
4745 -- ( 0.5499, 0.4620)
4746 .. controls ( 0.5250, 0.4718) and ( 0.5240, 0.4756) .. ( 0.5074, 0.4535)
4747 -- ( 0.5584, 0.4280)
4748 .. controls ( 0.6164, 0.4608) and ( 0.5800, 0.4918) .. ( 0.5668, 0.5384)
4749 --cycle
4750 ( 0.0770, 0.5310)
4751 .. controls ( 0.0682, 0.5304) and ( 0.0588, 0.5222) .. ( 0.0538, 0.5053)
4752 .. controls ( 0.0343, 0.4401) and ( 0.0794, 0.3794) .. ( 0.1169, 0.4450)
4753 -- ( 0.0830, 0.4535)
4754 .. controls ( 0.0904, 0.4711) and ( 0.1010, 0.4920) .. ( 0.0968, 0.5117)
4755 .. controls ( 0.0941, 0.5249) and ( 0.0858, 0.5317) .. ( 0.0770, 0.5310)
4756 --cycle
4757 (-0.3075, 0.5299)
4758 -- (-0.3414, 0.4790)
4759 -- (-0.3330, 0.4705)
4760 .. controls (-0.2926, 0.4813) and (-0.2724, 0.4931) .. (-0.3075, 0.5299)
4761 --cycle
4762 (-0.6105, 0.5210)
4763 .. controls (-0.6292, 0.5286) and (-0.6359, 0.5102) .. (-0.6385, 0.4790)
4764 -- (-0.5876, 0.5044)
4765 .. controls (-0.5967, 0.5132) and (-0.6043, 0.5185) .. (-0.6105, 0.5210)
4766 --cycle
4767 (-0.6810, 0.5129)
4768 .. controls (-0.6924, 0.5121) and (-0.7036, 0.5121) .. (-0.7147, 0.5086)
4769 .. controls (-0.7151, 0.5085) and (-0.7153, 0.5083) .. (-0.7157, 0.5081)
4770 -- (-0.7430, 0.4612)
4771 .. controls (-0.7297, 0.4478) and (-0.7007, 0.4457) .. (-0.6860, 0.4801)
4772 .. controls (-0.6815, 0.4906) and (-0.6819, 0.5019) .. (-0.6810, 0.5129)

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4773 --cycle
4774 (-0.1462, 0.5129)
4775 .. controls (-0.1949, 0.5129) and (-0.2098, 0.5207) .. (-0.2480, 0.4875)
4776 -- (-0.2480, 0.4790)
4777 -- (-0.2311, 0.4620)
4778 -- (-0.1801, 0.4790)
4779 -- (-0.1801, 0.4535)
4780 -- (-0.1462, 0.4535)
4781 --cycle
4782 ( 0.0066, 0.5044)
4783 -- (-0.0019, 0.4620)
4784 .. controls (-0.0908, 0.4424) and (-0.0252, 0.3738) .. ( 0.0185, 0.4370)
4785 .. controls ( 0.0238, 0.4448) and ( 0.0272, 0.4527) .. ( 0.0290, 0.4620)
4786 .. controls ( 0.0322, 0.4784) and ( 0.0277, 0.4893) .. ( 0.0236, 0.5044)
4787 --cycle
4788 (-0.5118, 0.4944)
4789 .. controls (-0.5315, 0.4962) and (-0.5506, 0.4944) .. (-0.5676, 0.4798)
4790 .. controls (-0.5973, 0.4546) and (-0.5662, 0.4306) .. (-0.5676, 0.4033)
4791 .. controls (-0.5682, 0.3806) and (-0.5896, 0.3679) .. (-0.5934, 0.3509)
4792 .. controls (-0.6001, 0.3209) and (-0.5656, 0.2986) .. (-0.5452, 0.2838)
4793 -- (-0.5621, 0.2498)
4794 -- (-0.5282, 0.2498)
4795 .. controls (-0.5165, 0.2920) and (-0.5111, 0.3040) .. (-0.5536, 0.3262)
4796 .. controls (-0.5263, 0.3959) and (-0.5223, 0.3799) .. (-0.5452, 0.4535)
4797 -- (-0.4857, 0.4705)
4798 -- (-0.4518, 0.4535)
4799 -- (-0.4518, 0.4875)
4800 .. controls (-0.4715, 0.4873) and (-0.4920, 0.4926) .. (-0.5118, 0.4944)
4801 --cycle
4802 ( 0.3588, 0.4802)
4803 .. controls ( 0.3533, 0.4806) and ( 0.3465, 0.4801) .. ( 0.3377, 0.4790)
4804 -- ( 0.3801, 0.4365)
4805 -- ( 0.3886, 0.4450)
4806 .. controls ( 0.3795, 0.4694) and ( 0.3752, 0.4789) .. ( 0.3588, 0.4802)
4807 --cycle
4808 (-0.3923, 0.4620)
4809 .. controls (-0.3995, 0.4156) and (-0.3752, 0.3562) .. (-0.3330, 0.3347)
4810 -- (-0.3245, 0.3431)
4811 -- (-0.3172, 0.4229)
4812 -- (-0.3754, 0.4620)
4813 --cycle
4814 ( 0.1254, 0.4620)
4815 .. controls ( 0.1311, 0.4303) and ( 0.1371, 0.3466) .. ( 0.1909, 0.3657)
4816 .. controls ( 0.2082, 0.3718) and ( 0.2132, 0.3929) .. ( 0.2274, 0.4041)
4817 .. controls ( 0.2376, 0.4123) and ( 0.2569, 0.4158) .. ( 0.2697, 0.4196)
4818 .. controls ( 0.2404, 0.4707) and ( 0.2211, 0.4375) .. ( 0.1594, 0.4196)
4819 --cycle
4820 ( 0.6347, 0.4620)
4821 .. controls ( 0.5865, 0.3970) and ( 0.5594, 0.4145) .. ( 0.5753, 0.3516)
4822 .. controls ( 0.6248, 0.3639) and ( 0.6190, 0.3659) .. ( 0.6687, 0.3516)
4823 .. controls ( 0.6624, 0.3942) and ( 0.6392, 0.4050) .. ( 0.6772, 0.4280)
4824 --cycle
4825 (-0.2735, 0.4535)

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4826 .. controls (-0.2776, 0.4212) and (-0.2764, 0.4187) .. (-0.2480, 0.4026)
4827 -- (-0.2565, 0.4535)
4828 --cycle
4829 ( 0.4565, 0.4535)
4830 -- ( 0.4395, 0.4365)
4831 -- ( 0.4395, 0.4280)
4832 -- ( 0.4565, 0.4111)
4833 -- ( 0.4649, 0.4111)
4834 -- ( 0.4819, 0.4280)
4835 --cycle
4836 ( 0.7558, 0.4524)
4837 .. controls ( 0.7494, 0.4473) and ( 0.7430, 0.4394) .. ( 0.7366, 0.4280)
4838 .. controls ( 0.7552, 0.4225) and ( 0.7653, 0.4183) .. ( 0.7753, 0.4176)
4839 --cycle
4840 (-0.4518, 0.4450)
4841 -- (-0.4772, 0.4365)
4842 -- (-0.4518, 0.4196)
4843 --cycle
4844 (-0.6423, 0.4300)
4845 .. controls (-0.6532, 0.4307) and (-0.6637, 0.4304) .. (-0.6690, 0.4274)
4846 .. controls (-0.6866, 0.4158) and (-0.6850, 0.3910) .. (-0.6630, 0.3848)
4847 -- (-0.6130, 0.3848)
4848 -- (-0.6130, 0.4274)
4849 .. controls (-0.6201, 0.4279) and (-0.6314, 0.4294) .. (-0.6423, 0.4300)
4850 --cycle
4851 ( 0.7111, 0.4196)
4852 -- ( 0.7451, 0.3771)
4853 .. controls ( 0.7399, 0.4071) and ( 0.7394, 0.4082) .. ( 0.7111, 0.4196)
4854 --cycle
4855 (-0.7404, 0.4111)
4856 -- (-0.7574, 0.3347)
4857 -- (-0.7065, 0.3262)
4858 -- (-0.7234, 0.4111)
4859 --cycle
4860 (-0.1547, 0.4111)
4861 -- (-0.1462, 0.3601)
4862 -- (-0.1038, 0.3856)
4863 .. controls (-0.0885, 0.3562) and (-0.0864, 0.3520) .. (-0.0528, 0.3516)
4864 -- (-0.0783, 0.4026)
4865 --cycle
4866 ( 0.3886, 0.4111)
4867 .. controls ( 0.3213, 0.4055) and ( 0.3289, 0.3610) .. ( 0.3801, 0.3347)
4868 --cycle
4869 ( 0.3801, 0.3347)
4870 -- ( 0.3801, 0.3262)
4871 -- ( 0.3631, 0.3092)
4872 -- ( 0.3801, 0.2753)
4873 -- ( 0.3971, 0.2753)
4874 .. controls ( 0.4050, 0.3067) and ( 0.4083, 0.3157) .. ( 0.3801, 0.3347)
4875 --cycle
4876 ( 0.5074, 0.4026)
4877 -- ( 0.4565, 0.3516)
4878 .. controls ( 0.4935, 0.3518) and ( 0.5571, 0.3505) .. ( 0.5074, 0.4026)

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4879 --cycle
4880 (-0.4348, 0.3941)
4881 -- (-0.4433, 0.3856)
4882 -- (-0.4348, 0.3516)
4883 -- (-0.4008, 0.3856)
4884 --cycle
4885 (-0.5112, 0.3856)
4886 -- (-0.5027, 0.3347)
4887 -- (-0.4518, 0.3856)
4888 --cycle
4889 ( 0.0405, 0.3856)
4890 .. controls ( 0.0481, 0.3444) and ( 0.0444, 0.3224) .. ( 0.0830, 0.3007)
4891 -- ( 0.1169, 0.3686)
4892 --cycle
4893 ( 0.2586, 0.3821)
4894 .. controls ( 0.2327, 0.3759) and ( 0.2165, 0.3319) .. ( 0.2699, 0.3440)
4895 -- ( 0.2952, 0.3516)
4896 .. controls ( 0.2928, 0.3578) and ( 0.2924, 0.3646) .. ( 0.2856, 0.3722)
4897 .. controls ( 0.2770, 0.3820) and ( 0.2672, 0.3842) .. ( 0.2586, 0.3821)
4898 --cycle
4899 (-0.2650, 0.3686)
4900 .. controls (-0.2695, 0.3349) and (-0.2648, 0.3302) .. (-0.2311, 0.3347)
4901 --cycle
4902 ( 0.8037, 0.3670)
4903 .. controls ( 0.7958, 0.3549) and ( 0.8002, 0.3405) .. ( 0.8215, 0.3262)
4904 -- ( 0.8225, 0.3334)
4905 --cycle
4906 (-0.0104, 0.3601)
4907 -- (-0.0273, 0.3007)
4908 -- (-0.0698, 0.3007)
4909 .. controls (-0.0385, 0.2465) and ( 0.0057, 0.2824) .. ( 0.0066, 0.3601)
4910 --cycle
4911 (-0.4348, 0.3431)
4912 -- (-0.4348, 0.3007)
4913 .. controls (-0.4123, 0.3163) and (-0.4143, 0.3163) .. (-0.4178, 0.3431)
4914 --cycle
4915 (-0.8185, 0.3317)
4916 -- (-0.8365, 0.3007)
4917 -- (-0.7998, 0.3007)
4918 -- (-0.7998, 0.3177)
4919 --cycle
4920 ( 0.4649, 0.3315)
4921 .. controls ( 0.4219, 0.3238) and ( 0.4094, 0.2904) .. ( 0.4395, 0.2583)
4922 -- ( 0.4565, 0.2922)
4923 -- ( 0.5414, 0.2922)
4924 -- ( 0.5414, 0.3092)
4925 .. controls ( 0.5190, 0.3194) and ( 0.4902, 0.3361) .. ( 0.4649, 0.3315)
4926 --cycle
4927 (-0.6388, 0.3309)
4928 .. controls (-0.6527, 0.3328) and (-0.6597, 0.3256) .. (-0.6674, 0.3156)
4929 -- (-0.6895, 0.2838)
4930 .. controls (-0.6839, 0.2742) and (-0.6820, 0.2649) .. (-0.6700, 0.2597)
4931 .. controls (-0.6290, 0.2418) and (-0.5917, 0.3244) .. (-0.6388, 0.3309)

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4932  --cycle
4933  (-0.1462, 0.3262)
4934  .. controls (-0.1623, 0.2693) and (-0.1610, 0.2418) .. (-0.0953, 0.2498)
4935  -- (-0.1292, 0.3262)
4936  --cycle
4937  ( 0.2103, 0.3262)
4938  -- ( 0.1849, 0.2753)
4939  .. controls ( 0.2243, 0.2757) and ( 0.2321, 0.2881) .. ( 0.2273, 0.3262)
4940  --cycle
4941  ( 0.3292, 0.3262)
4942  -- ( 0.2782, 0.2668)
4943  -- ( 0.2782, 0.2498)
4944  -- ( 0.3390, 0.2109)
4945  .. controls ( 0.3506, 0.1937) and ( 0.3360, 0.1683) .. ( 0.3513, 0.1579)
4946  .. controls ( 0.3686, 0.1461) and ( 0.4096, 0.1877) .. ( 0.3631, 0.2073)
4947  -- ( 0.3801, 0.2243)
4948  -- ( 0.3377, 0.2583)
4949  -- ( 0.3546, 0.3007)
4950  --cycle
4951  ( 0.6941, 0.3262)
4952  -- ( 0.6941, 0.2838)
4953  -- ( 0.7111, 0.2838)
4954  -- ( 0.7111, 0.3262)
4955  --cycle
4956  ( 0.7706, 0.3177)
4957  -- ( 0.7366, 0.3092)
4958  -- ( 0.7366, 0.2922)
4959  -- ( 0.7451, 0.2838)
4960  -- ( 0.7621, 0.2838)
4961  --cycle
4962  (-0.7913, 0.3092)
4963  -- (-0.7828, 0.2583)
4964  -- (-0.7658, 0.2583)
4965  -- (-0.7574, 0.2668)
4966  -- (-0.7743, 0.3092)
4967  --cycle
4968  ( 0.6093, 0.3092)
4969  -- ( 0.5838, 0.2413)
4970  -- ( 0.6093, 0.2668)
4971  -- ( 0.6347, 0.2583)
4972  -- ( 0.6432, 0.3092)
4973  --cycle
4974  (-0.3494, 0.3079)
4975  .. controls (-0.4142, 0.2885) and (-0.3452, 0.2195) .. (-0.3258, 0.2842)
4976  -- (-0.3258, 0.3079)
4977  --cycle
4978  ( 0.1084, 0.3007)
4979  .. controls ( 0.1005, 0.2885) and ( 0.0956, 0.2764) .. ( 0.0807, 0.2708)
4980  .. controls ( 0.0663, 0.2653) and ( 0.0431, 0.2752) .. ( 0.0335, 0.2617)
4981  .. controls ( 0.0200, 0.2427) and ( 0.0540, 0.2322) .. ( 0.0660, 0.2298)
4982  .. controls ( 0.1034, 0.2226) and ( 0.1204, 0.2407) .. ( 0.1509, 0.2583)
4983  --cycle
4984  (-0.2201, 0.2946)

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4985 .. controls (-0.2487, 0.2922) and (-0.2701, 0.2767) .. (-0.2990, 0.2583)
4986 -- (-0.2565, 0.2073)
4987 -- (-0.1886, 0.2922)
4988 .. controls (-0.2003, 0.2947) and (-0.2106, 0.2954) .. (-0.2201, 0.2946)
4989 --cycle
4990 (-0.4772, 0.2583)
4991 .. controls (-0.5022, 0.2481) and (-0.5267, 0.2367) .. (-0.5427, 0.2138)
4992 .. controls (-0.5681, 0.1773) and (-0.5547, 0.1549) .. (-0.5112, 0.1575)
4993 .. controls (-0.4976, 0.1584) and (-0.4899, 0.1613) .. (-0.4772, 0.1649)
4994 -- (-0.4688, 0.1564)
4995 -- (-0.4688, 0.1225)
4996 -- (-0.4518, 0.1225)
4997 .. controls (-0.4302, 0.1774) and (-0.4489, 0.1866) .. (-0.5027, 0.1988)
4998 --cycle
4999 (-0.4433, 0.2583)
5000 -- (-0.4348, 0.2073)
5001 -- (-0.4263, 0.2073)
5002 -- (-0.4093, 0.2243)
5003 -- (-0.4263, 0.2583)
5004 --cycle
5005 (-0.8446, 0.2512)
5006 .. controls (-0.8626, 0.2459) and (-0.8672, 0.2066) .. (-0.8677, 0.1903)
5007 .. controls (-0.8362, 0.1909) and (-0.8333, 0.1924) .. (-0.8168, 0.1649)
5008 -- (-0.7913, 0.1734)
5009 .. controls (-0.7979, 0.1888) and (-0.8118, 0.2347) .. (-0.8218, 0.2431)
5010 .. controls (-0.8311, 0.2510) and (-0.8386, 0.2530) .. (-0.8446, 0.2512)
5011 --cycle
5012 (-0.6130, 0.2498)
5013 -- (-0.6385, 0.1988)
5014 .. controls (-0.5969, 0.2023) and (-0.5781, 0.2132) .. (-0.6130, 0.2498)
5015 --cycle
5016 ( 0.7209, 0.2469)
5017 .. controls ( 0.7057, 0.2498) and ( 0.6918, 0.2452) .. ( 0.6875, 0.2241)
5018 .. controls ( 0.6832, 0.1844) and ( 0.7333, 0.1800) .. ( 0.6875, 0.1309)
5019 .. controls ( 0.6935, 0.1147) and ( 0.6966, 0.1050) .. ( 0.7123, 0.0936)
5020 .. controls ( 0.7287, 0.0815) and ( 0.7996, 0.0650) .. ( 0.8166, 0.0782)
5021 .. controls ( 0.8441, 0.0997) and ( 0.8443, 0.1468) .. ( 0.7875, 0.1564)
5022 -- ( 0.8130, 0.1055)
5023 -- ( 0.7706, 0.0970)
5024 .. controls ( 0.7537, 0.1222) and ( 0.7493, 0.1200) .. ( 0.7196, 0.1225)
5025 -- ( 0.7621, 0.2241)
5026 .. controls ( 0.7526, 0.2335) and ( 0.7361, 0.2440) .. ( 0.7209, 0.2469)
5027 --cycle
5028 ( 0.5029, 0.2452)
5029 .. controls ( 0.4837, 0.2409) and ( 0.4663, 0.2223) .. ( 0.4749, 0.2012)
5030 .. controls ( 0.4861, 0.1737) and ( 0.5371, 0.1377) .. ( 0.5668, 0.1819)
5031 .. controls ( 0.5276, 0.2081) and ( 0.5495, 0.2337) .. ( 0.5218, 0.2442)
5032 .. controls ( 0.5159, 0.2464) and ( 0.5093, 0.2466) .. ( 0.5029, 0.2452)
5033 --cycle
5034 (-0.7065, 0.2328)
5035 .. controls (-0.7174, 0.2318) and (-0.7287, 0.2323) .. (-0.7391, 0.2277)
5036 .. controls (-0.7803, 0.2096) and (-0.7474, 0.1632) .. (-0.7171, 0.2086)
5037 --cycle

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5038 (-0.0188, 0.2328)
5039 .. controls (-0.0280, 0.2283) and (-0.0341, 0.2273) .. (-0.0430, 0.2197)
5040 .. controls (-0.1097, 0.1629) and ( 0.0304, 0.1216) .. (-0.0010, 0.2037)
5041 --cycle
5042 ( 0.2612, 0.2328)
5043 -- ( 0.1849, 0.2073)
5044 .. controls ( 0.2210, 0.1548) and ( 0.2532, 0.1800) .. ( 0.2612, 0.2328)
5045 --cycle
5046 (-0.3330, 0.2243)
5047 -- (-0.3958, 0.1938)
5048 .. controls (-0.4203, 0.1689) and (-0.3928, 0.1505) .. (-0.4518, 0.0970)
5049 -- (-0.4518, 0.0800)
5050 .. controls (-0.4010, 0.0738) and (-0.3851, 0.1024) .. (-0.3754, 0.1479)
5051 .. controls (-0.3297, 0.1544) and (-0.3165, 0.1646) .. (-0.2990, 0.2073)
5052 --cycle
5053 (-0.1971, 0.2243)
5054 -- (-0.2056, 0.1479)
5055 -- (-0.1462, 0.1394)
5056 -- (-0.1462, 0.1564)
5057 -- (-0.1801, 0.2243)
5058 --cycle
5059 ( 0.8384, 0.2243)
5060 .. controls ( 0.8324, 0.1770) and ( 0.8519, 0.1318) .. ( 0.8979, 0.1140)
5061 -- ( 0.9064, 0.1225)
5062 .. controls ( 0.8952, 0.1805) and ( 0.8898, 0.1922) .. ( 0.8384, 0.2243)
5063 --cycle
5064 ( 0.0151, 0.2073)
5065 -- ( 0.0151, 0.1903)
5066 -- ( 0.0405, 0.1819)
5067 -- ( 0.0405, 0.1479)
5068 -- ( 0.0575, 0.1479)
5069 -- ( 0.0575, 0.1564)
5070 -- ( 0.0745, 0.1734)
5071 .. controls ( 0.0548, 0.2031) and ( 0.0517, 0.2101) .. ( 0.0151, 0.2073)
5072 --cycle
5073 ( 0.6262, 0.2073)
5074 -- ( 0.6347, 0.1734)
5075 -- ( 0.6517, 0.1734)
5076 -- ( 0.6602, 0.1819)
5077 -- ( 0.6602, 0.1988)
5078 --cycle
5079 ( 0.7621, 0.2073)
5080 -- ( 0.7621, 0.1649)
5081 .. controls ( 0.7903, 0.1763) and ( 0.7908, 0.1774) .. ( 0.7960, 0.2073)
5082 --cycle
5083 (-0.8988, 0.1938)
5084 -- (-0.9014, 0.1893)
5085 .. controls (-0.9006, 0.1906) and (-0.8994, 0.1914) .. (-0.8988, 0.1930)
5086 .. controls (-0.8987, 0.1933) and (-0.8989, 0.1936) .. (-0.8988, 0.1938)
5087 --cycle
5088 (-0.1292, 0.1903)
5089 -- (-0.1292, 0.1479)
5090 -- (-0.0953, 0.1819)

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5091 --cycle
5092 ( 0.2952, 0.1903)
5093 .. controls ( 0.2890, 0.1611) and ( 0.2867, 0.1567) .. ( 0.3122, 0.1394)
5094 -- ( 0.3122, 0.1903)
5095 --cycle
5096 (-0.6895, 0.1819)
5097 -- (-0.6895, 0.1479)
5098 -- (-0.6640, 0.1564)
5099 -- (-0.6640, 0.1734)
5100 -- (-0.6725, 0.1819)
5101 --cycle
5102 ( 0.1480, 0.1735)
5103 .. controls ( 0.1310, 0.1697) and ( 0.1252, 0.1423) .. ( 0.1594, 0.1225)
5104 -- ( 0.1849, 0.1479)
5105 .. controls ( 0.1726, 0.1694) and ( 0.1583, 0.1757) .. ( 0.1480, 0.1735)
5106 --cycle
5107 (-0.6300, 0.1734)
5108 .. controls (-0.6429, 0.1238) and (-0.6284, 0.1142) .. (-0.5876, 0.0885)
5109 -- (-0.6215, 0.0461)
5110 -- (-0.6640, 0.0800)
5111 .. controls (-0.6670, 0.0697) and (-0.6746, 0.0478) .. (-0.6743, 0.0381)
5112 .. controls (-0.6736, 0.0066) and (-0.6456, 0.0044) .. (-0.6219, 0.0135)
5113 .. controls (-0.5925, 0.0247) and (-0.5281, 0.0777) .. (-0.5319, 0.1120)
5114 .. controls (-0.5350, 0.1399) and (-0.5677, 0.1315) .. (-0.5853, 0.1410)
5115 .. controls (-0.5998, 0.1487) and (-0.6048, 0.1603) .. (-0.6130, 0.1734)
5116 --cycle
5117 (-0.6640, 0.0800)
5118 .. controls (-0.6595, 0.1137) and (-0.6643, 0.1185) .. (-0.6980, 0.1140)
5119 --cycle
5120 (-0.2565, 0.1734)
5121 -- (-0.3584, 0.1309)
5122 -- (-0.3330, 0.0800)
5123 -- (-0.2990, 0.1140)
5124 .. controls (-0.2519, 0.1142) and (-0.2453, 0.1302) .. (-0.2565, 0.1734)
5125 --cycle
5126 ( 0.2271, 0.1407)
5127 .. controls ( 0.1925, 0.1328) and ( 0.1533, 0.0767) .. ( 0.2190, 0.0890)
5128 -- ( 0.2612, 0.0970)
5129 .. controls ( 0.2604, 0.1073) and ( 0.2611, 0.1186) .. ( 0.2562, 0.1281)
5130 .. controls ( 0.2497, 0.1405) and ( 0.2386, 0.1433) .. ( 0.2271, 0.1407)
5131 --cycle
5132 (-0.0698, 0.1394)
5133 .. controls (-0.0981, 0.1280) and (-0.0986, 0.1270) .. (-0.1038, 0.0970)
5134 -- (-0.0698, 0.0970)
5135 --cycle
5136 ( 0.3971, 0.1394)
5137 -- ( 0.3971, 0.1225)
5138 -- ( 0.4056, 0.1140)
5139 -- ( 0.4395, 0.1225)
5140 -- ( 0.4395, 0.1394)
5141 --cycle
5142 ( 0.6090, 0.1316)
5143 .. controls ( 0.5968, 0.1320) and ( 0.5847, 0.1313) .. ( 0.5753, 0.1309)

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5144 .. controls ( 0.5937, 0.1034) and ( 0.6031, 0.1066) .. ( 0.6347, 0.1055)
5145 .. controls ( 0.5863, 0.0654) and ( 0.5849, 0.0269) .. ( 0.6432,-0.0049)
5146 -- ( 0.6262, 0.0461)
5147 -- ( 0.6488, 0.0715)
5148 .. controls ( 0.6828, 0.1212) and ( 0.6456, 0.1307) .. ( 0.6090, 0.1316)
5149 --cycle
5150 (-0.9354, 0.1309)
5151 -- (-0.9422, 0.1193)
5152 -- (-0.9356, 0.0800)
5153 -- (-0.8847, 0.0970)
5154 -- (-0.8847, 0.1309)
5155 --cycle
5156 (-0.8507, 0.1309)
5157 .. controls (-0.8417, 0.0965) and (-0.8401, 0.0890) .. (-0.8083, 0.0715)
5158 .. controls (-0.8126, 0.1087) and (-0.8139, 0.1187) .. (-0.8507, 0.1309)
5159 --cycle
5160 ( 0.1084, 0.1309)
5161 -- ( 0.0575, 0.1225)
5162 .. controls ( 0.0537, 0.0923) and ( 0.0510, 0.0922) .. ( 0.0236, 0.0800)
5163 .. controls ( 0.0578, 0.0292) and ( 0.1015, 0.0713) .. ( 0.1084, 0.1309)
5164 --cycle
5165 ( 0.4819, 0.1309)
5166 -- ( 0.5028, 0.0739)
5167 -- ( 0.4819,-0.0049)
5168 .. controls ( 0.4993,-0.0102) and ( 0.5299,-0.0233) .. ( 0.5472,-0.0163)
5169 .. controls ( 0.5677,-0.0081) and ( 0.5663, 0.0195) .. ( 0.5644, 0.0376)
5170 .. controls ( 0.5592, 0.0860) and ( 0.5308, 0.1235) .. ( 0.4819, 0.1309)
5171 --cycle
5172 ( 0.3461, 0.1140)
5173 .. controls ( 0.3108, 0.0951) and ( 0.3082, 0.0849) .. ( 0.3037, 0.0461)
5174 .. controls ( 0.3481, 0.0535) and ( 0.3552, 0.0713) .. ( 0.3461, 0.1140)
5175 --cycle
5176 (-0.4857, 0.0970)
5177 .. controls (-0.5241, 0.0326) and (-0.4983, 0.0214) .. (-0.4348, 0.0206)
5178 .. controls (-0.4420,-0.0343) and (-0.4036,-0.0413) .. (-0.3728,-0.0186)
5179 .. controls (-0.3557,-0.0061) and (-0.3442, 0.0265) .. (-0.3330, 0.0461)
5180 .. controls (-0.3807, 0.0916) and (-0.3834, 0.0423) .. (-0.3839, 0.0036)
5181 --cycle
5182 (-0.2480, 0.0970)
5183 -- (-0.2480, 0.0800)
5184 -- (-0.2056, 0.0800)
5185 -- (-0.2056, 0.0970)
5186 --cycle
5187 (-0.1292, 0.0970)
5188 -- (-0.1462, 0.0800)
5189 -- (-0.1462, 0.0715)
5190 -- (-0.1292, 0.0546)
5191 -- (-0.1208, 0.0546)
5192 -- (-0.1038, 0.0715)
5193 --cycle
5194 ( 0.3801, 0.0800)
5195 -- ( 0.3801, 0.0206)
5196 -- ( 0.3971, 0.0206)

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5197 -- ( 0.4056, 0.0291)
5198 -- ( 0.4140, 0.0800)
5199 --cycle
5200 ( 0.4225, 0.0800)
5201 .. controls ( 0.4316, 0.0456) and ( 0.4332, 0.0381) .. ( 0.4649, 0.0206)
5202 .. controls ( 0.4618, 0.0591) and ( 0.4606, 0.0679) .. ( 0.4225, 0.0800)
5203 --cycle
5204 ( 0.8809, 0.0759)
5205 .. controls ( 0.8722, 0.0759) and ( 0.8634, 0.0659) .. ( 0.8554, 0.0461)
5206 -- ( 0.9064, 0.0461)
5207 .. controls ( 0.8984, 0.0659) and ( 0.8897, 0.0759) .. ( 0.8809, 0.0759)
5208 --cycle
5209 ( 0.1413, 0.0752)
5210 .. controls ( 0.1324, 0.0761) and ( 0.1215, 0.0749) .. ( 0.1084, 0.0715)
5211 .. controls ( 0.1253, 0.0362) and ( 0.1326, 0.0290) .. ( 0.1679, 0.0121)
5212 .. controls ( 0.1762, 0.0511) and ( 0.1679, 0.0726) .. ( 0.1413, 0.0752)
5213 --cycle
5214 (-0.7409, 0.0649)
5215 .. controls (-0.7448, 0.0648) and (-0.7485, 0.0639) .. (-0.7518, 0.0618)
5216 .. controls (-0.7690, 0.0508) and (-0.7544,-0.0147) .. (-0.7438,-0.0279)
5217 .. controls (-0.7341,-0.0398) and (-0.7273,-0.0409) .. (-0.7149,-0.0473)
5218 -- (-0.7065, 0.0546)
5219 .. controls (-0.7159, 0.0583) and (-0.7292, 0.0653) .. (-0.7409, 0.0649)
5220 --cycle
5221 ( 0.9762, 0.0591)
5222 -- ( 0.9564, 0.0203)
5223 .. controls ( 0.9517,-0.0013) and ( 0.9637,-0.0270) .. ( 0.9761,-0.0510)
5224 -- ( 0.9997,-0.0105)
5225 .. controls ( 1.0000,-0.0010) and ( 1.0000, 0.0075) .. ( 0.9998, 0.0171)
5226 --cycle
5227 (-0.1717, 0.0546)
5228 .. controls (-0.2038, 0.0492) and (-0.2042, 0.0472) .. (-0.2226, 0.0206)
5229 -- (-0.1717, 0.0206)
5230 --cycle
5231 ( 0.7281, 0.0546)
5232 -- ( 0.6687, 0.0461)
5233 -- ( 0.6687, 0.0291)
5234 .. controls ( 0.7027, 0.0233) and ( 0.7100, 0.0245) .. ( 0.7281, 0.0546)
5235 --cycle
5236 (-0.9726, 0.0477)
5237 .. controls (-0.9758, 0.0477) and (-0.9806, 0.0473) .. (-0.9843, 0.0471)
5238 -- (-1.0000, 0.0201)
5239 -- (-0.9912, 0.0044)
5240 -- (-0.9696, 0.0206)
5241 -- (-0.9448,-0.0784)
5242 -- (-0.9432,-0.0812)
5243 -- (-0.8422,-0.0728)
5244 -- (-0.8677,-0.0982)
5245 -- (-0.8677,-0.1322)
5246 .. controls (-0.8159,-0.1280) and (-0.7904,-0.1016) .. (-0.8308,-0.0569)
5247 .. controls (-0.8618,-0.0226) and (-0.8917,-0.0142) .. (-0.9356,-0.0049)
5248 .. controls (-0.9393, 0.0402) and (-0.9477, 0.0479) .. (-0.9726, 0.0477)
5249 --cycle

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5250      (-0.0273, 0.0430)
5251      .. controls (-0.1037, 0.0283) and (-0.0659,-0.0617) .. (-0.0043, 0.0049)
5252      .. controls ( 0.0066, 0.0167) and ( 0.0086, 0.0240) .. ( 0.0151, 0.0376)
5253      .. controls ( 0.0001, 0.0416) and (-0.0110, 0.0461) .. (-0.0273, 0.0430)
5254      --cycle
5255      ( 0.2361, 0.0409)
5256      .. controls ( 0.2189, 0.0454) and ( 0.2022, 0.0366) .. ( 0.2018, 0.0036)
5257      .. controls ( 0.2379, 0.0017) and ( 0.2409,-0.0057) .. ( 0.2527,-0.0388)
5258      .. controls ( 0.2946,-0.0103) and ( 0.2647, 0.0336) .. ( 0.2361, 0.0409)
5259      --cycle
5260      (-0.2852, 0.0389)
5261      .. controls (-0.3005, 0.0379) and (-0.3023, 0.0289) .. (-0.2990, 0.0036)
5262      -- (-0.2650, 0.0376)
5263      .. controls (-0.2735, 0.0387) and (-0.2801, 0.0393) .. (-0.2852, 0.0389)
5264      --cycle
5265      ( 0.3037, 0.0291)
5266      .. controls ( 0.3231,-0.0055) and ( 0.3338,-0.0035) .. ( 0.3716,-0.0049)
5267      .. controls ( 0.3519, 0.0279) and ( 0.3402, 0.0269) .. ( 0.3037, 0.0291)
5268      --cycle
5269      (-0.8206, 0.0192)
5270      .. controls (-0.8430,-0.0126) and (-0.8179,-0.0291) .. (-0.8045,-0.0204)
5271      .. controls (-0.7923,-0.0127) and (-0.7854, 0.0239) .. (-0.8206, 0.0192)
5272      --cycle
5273      (-0.1371, 0.0134)
5274      .. controls (-0.1438, 0.0114) and (-0.1493, 0.0019) .. (-0.1547,-0.0134)
5275      -- (-0.1123,-0.0049)
5276      .. controls (-0.1224, 0.0099) and (-0.1303, 0.0154) .. (-0.1371, 0.0134)
5277      --cycle
5278      ( 0.7536, 0.0121)
5279      -- ( 0.7111, 0.0036)
5280      -- ( 0.7111,-0.0304)
5281      .. controls ( 0.7469,-0.0274) and ( 0.7588,-0.0268) .. ( 0.7536, 0.0121)
5282      --cycle
5283      ( 0.0750, 0.0106)
5284      .. controls ( 0.0661, 0.0093) and ( 0.0570, 0.0067) .. ( 0.0490, 0.0036)
5285      .. controls ( 0.0651,-0.0248) and ( 0.0680,-0.0250) .. ( 0.1000,-0.0304)
5286      .. controls ( 0.0590,-0.0732) and ( 0.0241,-0.0913) .. ( 0.0745,-0.1492)
5287      .. controls ( 0.1110,-0.1331) and ( 0.1272,-0.1362) .. ( 0.1424,-0.0982)
5288      -- ( 0.1339,-0.0897)
5289      -- ( 0.1000,-0.0982)
5290      .. controls ( 0.1057,-0.0835) and ( 0.1261,-0.0416) .. ( 0.1266,-0.0304)
5291      .. controls ( 0.1284, 0.0069) and ( 0.1019, 0.0144) .. ( 0.0750, 0.0106)
5292      --cycle
5293      (-0.2311, 0.0036)
5294      -- (-0.2311,-0.0049)
5295      -- (-0.2480,-0.0219)
5296      .. controls (-0.2373,-0.0386) and (-0.2259,-0.0581) .. (-0.2054,-0.0643)
5297      .. controls (-0.1781,-0.0725) and (-0.1665,-0.0457) .. (-0.1984,-0.0158)
5298      .. controls (-0.2100,-0.0050) and (-0.2177,-0.0027) .. (-0.2311, 0.0036)
5299      --cycle
5300      ( 0.8469, 0.0036)
5301      .. controls ( 0.8030,-0.0174) and ( 0.7970,-0.0343) .. ( 0.7706,-0.0728)
5302      .. controls ( 0.7934,-0.1060) and ( 0.7994,-0.1083) .. ( 0.8384,-0.0982)

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5303 -- ( 0.8384,-0.0813)
5304 -- ( 0.8130,-0.0728)
5305 -- ( 0.8130,-0.0558)
5306 .. controls ( 0.8448,-0.0370) and ( 0.8501,-0.0340) .. ( 0.8469, 0.0036)
5307 --cycle
5308 (-0.4603,-0.0049)
5309 .. controls (-0.4831,-0.0157) and (-0.5088,-0.0301) .. (-0.5182,-0.0557)
5310 .. controls (-0.5278,-0.0816) and (-0.5057,-0.0969) .. (-0.4907,-0.0883)
5311 .. controls (-0.4763,-0.0802) and (-0.4829,-0.0617) .. (-0.4518,-0.0304)
5312 -- (-0.4518,-0.0134)
5313 --cycle
5314 ( 0.4264,-0.0112)
5315 .. controls ( 0.3999,-0.0108) and ( 0.3834,-0.0280) .. ( 0.4056,-0.0728)
5316 -- ( 0.4565,-0.0558)
5317 -- ( 0.4649,-0.1237)
5318 -- ( 0.4819,-0.1237)
5319 -- ( 0.5074,-0.0558)
5320 .. controls ( 0.4895,-0.0297) and ( 0.4529,-0.0116) .. ( 0.4264,-0.0112)
5321 --cycle
5322 (-0.5706,-0.0134)
5323 -- (-0.6045,-0.0388)
5324 .. controls (-0.6509,-0.0147) and (-0.6809,-0.0236) .. (-0.6725,-0.0813)
5325 -- (-0.6980,-0.0897)
5326 .. controls (-0.6821,-0.1195) and (-0.6788,-0.1210) .. (-0.6470,-0.1322)
5327 .. controls (-0.6222,-0.0713) and (-0.6544,-0.0848) .. (-0.6130,-0.0473)
5328 .. controls (-0.5953,-0.0788) and (-0.5888,-0.0784) .. (-0.5536,-0.0813)
5329 --cycle
5330 ( 0.1679,-0.0219)
5331 .. controls ( 0.1573,-0.0941) and ( 0.2349,-0.1063) .. ( 0.2526,-0.0847)
5332 .. controls ( 0.2609,-0.0744) and ( 0.2602,-0.0596) .. ( 0.2612,-0.0473)
5333 --cycle
5334 (-0.3112,-0.0274)
5335 .. controls (-0.3586,-0.0281) and (-0.4163,-0.0558) .. (-0.4212,-0.0609)
5336 .. controls (-0.4295,-0.0692) and (-0.4319,-0.0787) .. (-0.4327,-0.0899)
5337 -- (-0.4327,-0.1492)
5338 -- (-0.4327,-0.2086)
5339 .. controls (-0.3777,-0.1999) and (-0.3244,-0.1312) .. (-0.4008,-0.1067)
5340 -- (-0.3823,-0.0879)
5341 .. controls (-0.3347,-0.0526) and (-0.3277,-0.1099) .. (-0.2903,-0.1163)
5342 .. controls (-0.2612,-0.1213) and (-0.2444,-0.0914) .. (-0.2507,-0.0659)
5343 .. controls (-0.2581,-0.0362) and (-0.2828,-0.0269) .. (-0.3112,-0.0274)
5344 --cycle
5345 ( 0.9234,-0.0304)
5346 -- ( 0.9149,-0.0643)
5347 -- ( 0.9488,-0.0558)
5348 -- ( 0.9488,-0.0388)
5349 -- ( 0.9403,-0.0304)
5350 --cycle
5351 ( 0.6406,-0.0369)
5352 .. controls ( 0.6333,-0.0375) and ( 0.6251,-0.0419) .. ( 0.6177,-0.0522)
5353 .. controls ( 0.6105,-0.0620) and ( 0.6112,-0.0704) .. ( 0.6093,-0.0799)
5354 -- ( 0.6342,-0.0799)
5355 .. controls ( 0.6760,-0.0673) and ( 0.6625,-0.0350) .. ( 0.6406,-0.0369)

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5356 --cycle
5357 (-0.0016,-0.0449)
5358 .. controls (-0.0461,-0.0548) and (-0.0410,-0.0663) .. (-0.0297,-0.1043)
5359 .. controls (-0.0250,-0.1199) and (-0.0232,-0.1440) .. (-0.0016,-0.1422)
5360 .. controls ( 0.0349,-0.1392) and ( 0.0554,-0.0537) .. (-0.0016,-0.0449)
5361 --cycle
5362 (-0.1123,-0.0473)
5363 -- (-0.1208,-0.1067)
5364 .. controls (-0.0719,-0.1062) and (-0.0661,-0.0635) .. (-0.1123,-0.0473)
5365 --cycle
5366 ( 0.3037,-0.0473)
5367 .. controls ( 0.3198,-0.0756) and ( 0.3223,-0.0769) .. ( 0.3546,-0.0728)
5368 .. controls ( 0.3383,-0.0447) and ( 0.3358,-0.0446) .. ( 0.3037,-0.0473)
5369 --cycle
5370 ( 0.5329,-0.0473)
5371 .. controls ( 0.5004,-0.0966) and ( 0.4981,-0.1266) .. ( 0.5668,-0.1322)
5372 -- ( 0.5499,-0.0473)
5373 --cycle
5374 (-0.1632,-0.0728)
5375 -- (-0.1462,-0.1067)
5376 -- (-0.1462,-0.0728)
5377 --cycle
5378 ( 0.7090,-0.0817)
5379 .. controls ( 0.6987,-0.0843) and ( 0.6911,-0.0952) .. ( 0.6894,-0.1068)
5380 .. controls ( 0.6863,-0.1276) and ( 0.7043,-0.1387) .. ( 0.7111,-0.1831)
5381 .. controls ( 0.7499,-0.1786) and ( 0.7602,-0.1760) .. ( 0.7791,-0.1407)
5382 -- ( 0.7196,-0.1322)
5383 -- ( 0.7451,-0.1068)
5384 .. controls ( 0.7324,-0.0850) and ( 0.7193,-0.0791) .. ( 0.7090,-0.0817)
5385 --cycle
5386 ( 0.9485,-0.0984)
5387 .. controls ( 0.9284,-0.1094) and ( 0.8781,-0.1542) .. ( 0.8706,-0.1754)
5388 .. controls ( 0.8655,-0.1897) and ( 0.8704,-0.2051) .. ( 0.8817,-0.2131)
5389 --cycle
5390 (-0.9323,-0.1007)
5391 -- (-0.9101,-0.1405)
5392 .. controls (-0.9101,-0.1287) and (-0.9146,-0.1173) .. (-0.9187,-0.1067)
5393 --cycle
5394 (-0.0528,-0.1067)
5395 .. controls (-0.0616,-0.1167) and (-0.0681,-0.1217) .. (-0.0735,-0.1348)
5396 .. controls (-0.0802,-0.1513) and (-0.0835,-0.2032) .. (-0.0603,-0.2082)
5397 .. controls (-0.0462,-0.2108) and (-0.0167,-0.1971) .. (-0.0603,-0.1577)
5398 .. controls (-0.0459,-0.1339) and (-0.0396,-0.1326) .. (-0.0528,-0.1067)
5399 --cycle
5400 (-0.4876,-0.1114)
5401 .. controls (-0.4992,-0.1127) and (-0.5150,-0.1170) .. (-0.5367,-0.1237)
5402 -- (-0.5367,-0.1577)
5403 -- (-0.4433,-0.1916)
5404 .. controls (-0.4544,-0.1299) and (-0.4526,-0.1074) .. (-0.4876,-0.1114)
5405 --cycle
5406 (-0.7635,-0.1120)
5407 .. controls (-0.7788,-0.1114) and (-0.7890,-0.1295) .. (-0.7913,-0.1577)
5408 -- (-0.7574,-0.1577)

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5409 .. controls (-0.7442,-0.2093) and (-0.7301,-0.2080) .. (-0.6810,-0.2086)
5410 -- (-0.6810,-0.1746)
5411 -- (-0.7149,-0.1916)
5412 .. controls (-0.7175,-0.1714) and (-0.7177,-0.1520) .. (-0.7311,-0.1350)
5413 .. controls (-0.7433,-0.1194) and (-0.7544,-0.1124) .. (-0.7635,-0.1120)
5414 --cycle
5415 (-0.2082,-0.1145)
5416 .. controls (-0.2215,-0.1126) and (-0.2378,-0.1199) .. (-0.2495,-0.1410)
5417 .. controls (-0.2530,-0.1510) and (-0.2546,-0.1612) .. (-0.2495,-0.1721)
5418 .. controls (-0.2475,-0.1840) and (-0.2388,-0.1913) .. (-0.2311,-0.2001)
5419 .. controls (-0.2202,-0.1931) and (-0.2111,-0.1884) .. (-0.2020,-0.1785)
5420 .. controls (-0.1722,-0.1464) and (-0.1860,-0.1177) .. (-0.2082,-0.1145)
5421 --cycle
5422 ( 0.4225,-0.1152)
5423 -- ( 0.3631,-0.1492)
5424 -- ( 0.3801,-0.1831)
5425 .. controls ( 0.4160,-0.1656) and ( 0.4276,-0.1565) .. ( 0.4225,-0.1152)
5426 --cycle
5427 (-0.5925,-0.1174)
5428 .. controls (-0.6021,-0.1151) and (-0.6144,-0.1208) .. (-0.6203,-0.1336)
5429 .. controls (-0.6283,-0.1508) and (-0.6192,-0.1674) .. (-0.6130,-0.1831)
5430 -- (-0.5961,-0.1831)
5431 .. controls (-0.5903,-0.1723) and (-0.5831,-0.1615) .. (-0.5803,-0.1494)
5432 .. controls (-0.5758,-0.1301) and (-0.5828,-0.1197) .. (-0.5925,-0.1174)
5433 --cycle
5434 ( 0.2952,-0.1237)
5435 -- ( 0.3292,-0.1746)
5436 -- ( 0.3377,-0.1746)
5437 -- ( 0.3546,-0.1577)
5438 .. controls ( 0.3339,-0.1275) and ( 0.3315,-0.1266) .. ( 0.2952,-0.1237)
5439 --cycle
5440 ( 0.1832,-0.1240)
5441 .. controls ( 0.1608,-0.1263) and ( 0.1298,-0.1544) .. ( 0.1254,-0.2086)
5442 .. controls ( 0.1747,-0.2011) and ( 0.2191,-0.1503) .. ( 0.2015,-0.1301)
5443 .. controls ( 0.1972,-0.1252) and ( 0.1907,-0.1232) .. ( 0.1832,-0.1240)
5444 --cycle
5445 (-0.3330,-0.1407)
5446 .. controls (-0.3325,-0.1552) and (-0.3330,-0.1683) .. (-0.3280,-0.1824)
5447 .. controls (-0.3221,-0.1993) and (-0.2907,-0.2626) .. (-0.2674,-0.2496)
5448 .. controls (-0.2290,-0.2283) and (-0.2939,-0.1556) .. (-0.3330,-0.1407)
5449 --cycle
5450 (-0.8677,-0.1492)
5451 .. controls (-0.8906,-0.2074) and (-0.8704,-0.2079) .. (-0.8168,-0.2086)
5452 -- (-0.8168,-0.2341)
5453 -- (-0.7828,-0.2341)
5454 .. controls (-0.7876,-0.1754) and (-0.8159,-0.1679) .. (-0.8677,-0.1492)
5455 --cycle
5456 ( 0.6507,-0.1523)
5457 .. controls ( 0.6150,-0.1514) and ( 0.5790,-0.1648) .. ( 0.5634,-0.2019)
5458 .. controls ( 0.5467,-0.2418) and ( 0.5701,-0.2915) .. ( 0.6347,-0.2595)
5459 -- ( 0.5923,-0.2426)
5460 .. controls ( 0.6167,-0.1901) and ( 0.6349,-0.1909) .. ( 0.6857,-0.1746)
5461 -- ( 0.6857,-0.1577)

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5462 .. controls ( 0.6745,-0.1545) and ( 0.6627,-0.1526) .. ( 0.6507,-0.1523)
5463 --cycle
5464 ( 0.4992,-0.1530)
5465 .. controls ( 0.4893,-0.1544) and ( 0.4788,-0.1613) .. ( 0.4723,-0.1757)
5466 .. controls ( 0.4601,-0.2024) and ( 0.4716,-0.2265) .. ( 0.4819,-0.2510)
5467 -- ( 0.4310,-0.2510)
5468 .. controls ( 0.4659,-0.3129) and ( 0.5002,-0.2692) .. ( 0.5329,-0.2341)
5469 .. controls ( 0.5195,-0.1890) and ( 0.5320,-0.1766) .. ( 0.5232,-0.1628)
5470 .. controls ( 0.5186,-0.1555) and ( 0.5091,-0.1515) .. ( 0.4992,-0.1530)
5471 --cycle
5472 (-0.1462,-0.1577)
5473 -- (-0.1462,-0.2001)
5474 -- (-0.1292,-0.2001)
5475 -- (-0.1292,-0.1577)
5476 --cycle
5477 ( 0.0490,-0.1577)
5478 -- ( 0.0066,-0.1831)
5479 -- ( 0.0066,-0.2001)
5480 .. controls ( 0.0224,-0.2077) and ( 0.0639,-0.2307) .. ( 0.0802,-0.2267)
5481 .. controls ( 0.1236,-0.2159) and ( 0.0615,-0.1657) .. ( 0.0490,-0.1577)
5482 --cycle
5483 ( 0.2527,-0.1577)
5484 -- ( 0.2358,-0.1746)
5485 -- ( 0.2273,-0.1746)
5486 -- ( 0.2273,-0.1916)
5487 .. controls ( 0.2817,-0.2389) and ( 0.2612,-0.2548) .. ( 0.3207,-0.2595)
5488 -- ( 0.2952,-0.2341)
5489 .. controls ( 0.2952,-0.1946) and ( 0.2813,-0.1829) .. ( 0.2527,-0.1577)
5490 --cycle
5491 ( 0.4124,-0.1906)
5492 .. controls ( 0.3901,-0.1934) and ( 0.3801,-0.2077) .. ( 0.3631,-0.2341)
5493 .. controls ( 0.4031,-0.2391) and ( 0.4075,-0.2303) .. ( 0.4395,-0.2086)
5494 -- ( 0.4395,-0.1916)
5495 .. controls ( 0.4286,-0.1900) and ( 0.4198,-0.1897) .. ( 0.4124,-0.1906)
5496 --cycle
5497 (-0.5282,-0.1916)
5498 -- (-0.5536,-0.2001)
5499 -- (-0.5282,-0.2171)
5500 --cycle
5501 (-0.6045,-0.2001)
5502 .. controls (-0.6700,-0.2056) and (-0.6485,-0.2287) .. (-0.6330,-0.2741)
5503 .. controls (-0.6243,-0.2991) and (-0.6268,-0.3013) .. (-0.6130,-0.3274)
5504 .. controls (-0.5769,-0.3048) and (-0.5602,-0.2946) .. (-0.5536,-0.2510)
5505 -- (-0.6045,-0.2510)
5506 --cycle
5507 (-0.3584,-0.2086)
5508 .. controls (-0.3921,-0.2259) and (-0.3939,-0.2318) .. (-0.4008,-0.2680)
5509 .. controls (-0.4235,-0.2397) and (-0.4237,-0.2318) .. (-0.4603,-0.2256)
5510 -- (-0.4603,-0.2850)
5511 .. controls (-0.4267,-0.2892) and (-0.3194,-0.3199) .. (-0.3429,-0.2424)
5512 --cycle
5513 ( 0.7960,-0.2086)
5514 -- ( 0.8384,-0.2510)

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5515 .. controls ( 0.8428,-0.2169) and ( 0.8301,-0.2042) .. ( 0.7960,-0.2086)
5516 --cycle
5517 ( 0.1928,-0.2162)
5518 .. controls ( 0.1816,-0.2174) and ( 0.1689,-0.2258) .. ( 0.1598,-0.2322)
5519 .. controls ( 0.1191,-0.2606) and ( 0.1214,-0.2831) .. ( 0.1339,-0.3274)
5520 -- ( 0.1509,-0.3274)
5521 .. controls ( 0.1561,-0.3114) and ( 0.1614,-0.2848) .. ( 0.1729,-0.2730)
5522 .. controls ( 0.1867,-0.2591) and ( 0.2098,-0.2594) .. ( 0.2174,-0.2461)
5523 .. controls ( 0.2253,-0.2321) and ( 0.2130,-0.2142) .. ( 0.1928,-0.2162)
5524 --cycle
5525 (-0.1905,-0.2188)
5526 .. controls (-0.1970,-0.2195) and (-0.2037,-0.2233) .. (-0.2087,-0.2284)
5527 .. controls (-0.2248,-0.2451) and (-0.2297,-0.2881) .. (-0.2311,-0.3104)
5528 -- (-0.1801,-0.3104)
5529 .. controls (-0.1960,-0.2531) and (-0.1611,-0.2530) .. (-0.1738,-0.2284)
5530 .. controls (-0.1778,-0.2206) and (-0.1840,-0.2181) .. (-0.1905,-0.2188)
5531 --cycle
5532 (-0.5112,-0.2256)
5533 -- (-0.5112,-0.2595)
5534 -- (-0.4772,-0.2595)
5535 -- (-0.4772,-0.2256)
5536 --cycle
5537 ( 0.7451,-0.2256)
5538 -- ( 0.6687,-0.2341)
5539 -- ( 0.6602,-0.2426)
5540 .. controls ( 0.6862,-0.3159) and ( 0.7361,-0.2848) .. ( 0.7451,-0.2256)
5541 --cycle
5542 (-0.8578,-0.2336)
5543 -- (-0.8203,-0.3006)
5544 .. controls (-0.7747,-0.3108) and (-0.8112,-0.2349) .. (-0.8578,-0.2336)
5545 --cycle
5546 (-0.0280,-0.2369)
5547 .. controls (-0.0529,-0.2386) and (-0.0646,-0.2625) .. (-0.0273,-0.3019)
5548 -- ( 0.0236,-0.2595)
5549 .. controls ( 0.0068,-0.2430) and (-0.0130,-0.2359) .. (-0.0280,-0.2369)
5550 --cycle
5551 (-0.7234,-0.2510)
5552 .. controls (-0.7141,-0.2750) and (-0.7050,-0.2842) .. (-0.6810,-0.2935)
5553 -- (-0.6725,-0.2850)
5554 .. controls (-0.6853,-0.2530) and (-0.6899,-0.2536) .. (-0.7234,-0.2510)
5555 --cycle
5556 ( 0.0504,-0.2510)
5557 -- ( 0.0504,-0.2760)
5558 .. controls ( 0.0689,-0.3381) and ( 0.1243,-0.2780) .. ( 0.0804,-0.2561)
5559 .. controls ( 0.0707,-0.2513) and ( 0.0594,-0.2519) .. ( 0.0504,-0.2510)
5560 --cycle
5561 (-0.1292,-0.2595)
5562 -- (-0.1462,-0.2765)
5563 -- (-0.1038,-0.3274)
5564 -- (-0.0953,-0.3274)
5565 -- (-0.0783,-0.3104)
5566 --cycle
5567 ( 0.7877,-0.2632)

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5568 .. controls ( 0.7523,-0.2682) and ( 0.7335,-0.3052) .. ( 0.7960,-0.3359)
5569 .. controls ( 0.8015,-0.3335) and ( 0.8068,-0.3333) .. ( 0.8122,-0.3324)
5570 -- ( 0.8442,-0.2774)
5571 .. controls ( 0.8248,-0.2696) and ( 0.8026,-0.2612) .. ( 0.7877,-0.2632)
5572 --cycle
5573 ( 0.5329,-0.2765)
5574 .. controls ( 0.5358,-0.3116) and ( 0.5353,-0.3182) .. ( 0.5668,-0.3359)
5575 .. controls ( 0.5639,-0.3008) and ( 0.5644,-0.2942) .. ( 0.5329,-0.2765)
5576 --cycle
5577 ( 0.3385,-0.2820)
5578 .. controls ( 0.3148,-0.2878) and ( 0.2673,-0.3492) .. ( 0.3385,-0.3614)
5579 -- ( 0.3122,-0.4038)
5580 .. controls ( 0.3574,-0.4463) and ( 0.3787,-0.4004) .. ( 0.3701,-0.3806)
5581 .. controls ( 0.3644,-0.3672) and ( 0.3492,-0.3602) .. ( 0.3377,-0.3529)
5582 -- ( 0.3886,-0.3019)
5583 .. controls ( 0.3746,-0.2928) and ( 0.3572,-0.2777) .. ( 0.3385,-0.2820)
5584 --cycle
5585 (-0.3075,-0.2850)
5586 -- (-0.3669,-0.3359)
5587 .. controls (-0.3237,-0.3346) and (-0.3194,-0.3327) .. (-0.2820,-0.3104)
5588 --cycle
5589 ( 0.6347,-0.2850)
5590 -- ( 0.6093,-0.3359)
5591 -- ( 0.6687,-0.3359)
5592 .. controls ( 0.6634,-0.3038) and ( 0.6614,-0.3034) .. ( 0.6347,-0.2850)
5593 --cycle
5594 ( 0.2482,-0.2927)
5595 .. controls ( 0.2430,-0.2922) and ( 0.2370,-0.2926) .. ( 0.2301,-0.2942)
5596 .. controls ( 0.1967,-0.3336) and ( 0.2478,-0.3609) .. ( 0.2647,-0.3515)
5597 .. controls ( 0.2796,-0.3431) and ( 0.2843,-0.2960) .. ( 0.2482,-0.2927)
5598 --cycle
5599 (-0.5371,-0.2933)
5600 .. controls (-0.5481,-0.2970) and (-0.5577,-0.3098) .. (-0.5621,-0.3359)
5601 -- (-0.5112,-0.3869)
5602 .. controls (-0.4600,-0.3526) and (-0.5043,-0.2822) .. (-0.5371,-0.2933)
5603 --cycle
5604 (-0.4433,-0.3019)
5605 .. controls (-0.4430,-0.3328) and (-0.4401,-0.3356) .. (-0.4093,-0.3359)
5606 -- (-0.4263,-0.3019)
5607 --cycle
5608 ( 0.0236,-0.3104)
5609 -- ( 0.0066,-0.3274)
5610 -- ( 0.0066,-0.3359)
5611 -- ( 0.0236,-0.3529)
5612 -- ( 0.0321,-0.3529)
5613 -- ( 0.0490,-0.3359)
5614 --cycle
5615 ( 0.4140,-0.3104)
5616 -- ( 0.4140,-0.3274)
5617 -- ( 0.4565,-0.3274)
5618 -- ( 0.4565,-0.3104)
5619 --cycle
5620 (-0.6555,-0.3189)

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5621 .. controls (-0.7282,-0.3463) and (-0.7047,-0.4238) .. (-0.6385,-0.3614)
5622 --cycle
5623 (-0.7635,-0.3203)
5624 .. controls (-0.7897,-0.3491) and (-0.7645,-0.3586) .. (-0.7512,-0.3515)
5625 .. controls (-0.7383,-0.3446) and (-0.7269,-0.3159) .. (-0.7635,-0.3203)
5626 --cycle
5627 (-0.1547,-0.3359)
5628 .. controls (-0.2375,-0.3951) and (-0.1886,-0.3975) .. (-0.2106,-0.4536)
5629 .. controls (-0.2221,-0.4826) and (-0.2548,-0.4886) .. (-0.2435,-0.5309)
5630 .. controls (-0.2373,-0.5540) and (-0.1692,-0.6520) .. (-0.1548,-0.5893)
5631 .. controls (-0.1503,-0.5696) and (-0.1713,-0.5323) .. (-0.1801,-0.5141)
5632 -- (-0.2141,-0.5141)
5633 -- (-0.1801,-0.4836)
5634 -- (-0.1632,-0.3784)
5635 -- (-0.1292,-0.3614)
5636 --cycle
5637 ( 0.5838,-0.3444)
5638 -- ( 0.6178,-0.3869)
5639 .. controls ( 0.6126,-0.3569) and ( 0.6121,-0.3558) .. ( 0.5838,-0.3444)
5640 --cycle
5641 (-0.5876,-0.3529)
5642 -- (-0.5876,-0.3869)
5643 -- (-0.5536,-0.3869)
5644 --cycle
5645 (-0.3075,-0.3529)
5646 .. controls (-0.3075,-0.4259) and (-0.3150,-0.4459) .. (-0.2480,-0.4378)
5647 .. controls (-0.2520,-0.3893) and (-0.2634,-0.3741) .. (-0.3075,-0.3529)
5648 --cycle
5649 ( 0.0745,-0.3529)
5650 .. controls ( 0.0603,-0.3977) and ( 0.0512,-0.3786) .. ( 0.0066,-0.3869)
5651 .. controls ( 0.0321,-0.4377) and ( 0.0562,-0.4373) .. ( 0.1084,-0.4378)
5652 -- ( 0.1254,-0.3614)
5653 --cycle
5654 ( 0.1868,-0.3534)
5655 .. controls ( 0.1605,-0.3550) and ( 0.1563,-0.3921) .. ( 0.1681,-0.4095)
5656 .. controls ( 0.1887,-0.4397) and ( 0.2596,-0.3970) .. ( 0.2782,-0.3784)
5657 .. controls ( 0.2016,-0.3640) and ( 0.2352,-0.3656) .. ( 0.1995,-0.3551)
5658 .. controls ( 0.1948,-0.3537) and ( 0.1906,-0.3532) .. ( 0.1868,-0.3534)
5659 --cycle
5660 (-0.0650,-0.3585)
5661 .. controls (-0.0712,-0.3584) and (-0.0783,-0.3594) .. (-0.0865,-0.3617)
5662 .. controls (-0.1407,-0.4045) and (-0.1029,-0.4414) .. (-0.0731,-0.4301)
5663 .. controls (-0.0250,-0.4118) and (-0.0217,-0.3591) .. (-0.0650,-0.3585)
5664 --cycle
5665 (-0.4008,-0.3614)
5666 -- (-0.3584,-0.4293)
5667 .. controls (-0.3814,-0.4389) and (-0.3792,-0.4389) .. (-0.3839,-0.4632)
5668 .. controls (-0.3078,-0.4504) and (-0.3334,-0.3529) .. (-0.4008,-0.3614)
5669 --cycle
5670 ( 0.7706,-0.3784)
5671 -- ( 0.6689,-0.4004)
5672 -- ( 0.6602,-0.4378)
5673 .. controls ( 0.6990,-0.4346) and ( 0.7019,-0.4328) .. ( 0.7281,-0.4038)

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5674 .. controls ( 0.7344,-0.4232) and ( 0.7382,-0.4373) .. ( 0.7461,-0.4460)
5675 -- ( 0.7747,-0.3969)
5676 --cycle
5677 (-0.7404,-0.3869)
5678 -- (-0.7574,-0.4038)
5679 .. controls (-0.7352,-0.4249) and (-0.7368,-0.4246) .. (-0.7065,-0.4208)
5680 -- (-0.7065,-0.4038)
5681 --cycle
5682 ( 0.3971,-0.3953)
5683 -- ( 0.3801,-0.4378)
5684 -- ( 0.4140,-0.4378)
5685 -- ( 0.4140,-0.3953)
5686 --cycle
5687 (-0.6640,-0.4038)
5688 .. controls (-0.6429,-0.4478) and (-0.6261,-0.4537) .. (-0.5876,-0.4802)
5689 -- (-0.5367,-0.4378)
5690 .. controls (-0.5592,-0.4163) and (-0.5680,-0.4098) .. (-0.5876,-0.4378)
5691 .. controls (-0.6195,-0.4110) and (-0.6224,-0.4072) .. (-0.6640,-0.4038)
5692 --cycle
5693 (-0.4603,-0.4038)
5694 -- (-0.4603,-0.4378)
5695 -- (-0.4263,-0.4378)
5696 -- (-0.4263,-0.4038)
5697 --cycle
5698 ( 0.5584,-0.4038)
5699 .. controls ( 0.5189,-0.4043) and ( 0.5111,-0.4167) .. ( 0.5159,-0.4548)
5700 -- ( 0.5329,-0.4548)
5701 --cycle
5702 ( 0.6093,-0.4123)
5703 -- ( 0.6008,-0.4378)
5704 -- ( 0.6262,-0.4378)
5705 --cycle
5706 ( 0.2273,-0.4293)
5707 -- ( 0.2273,-0.4632)
5708 -- ( 0.2612,-0.4632)
5709 -- ( 0.2612,-0.4293)
5710 --cycle
5711 ( 0.1339,-0.4378)
5712 .. controls ( 0.1294,-0.4715) and ( 0.1342,-0.4762) .. ( 0.1679,-0.4717)
5713 --cycle
5714 (-0.1337,-0.4435)
5715 .. controls (-0.1394,-0.4438) and (-0.1452,-0.4454) .. (-0.1547,-0.4474)
5716 -- (-0.1547,-0.4632)
5717 -- (-0.1038,-0.4972)
5718 -- (-0.1547,-0.5057)
5719 .. controls (-0.1508,-0.5315) and (-0.1180,-0.5928) .. (-0.0833,-0.5723)
5720 .. controls (-0.0768,-0.5684) and (-0.0244,-0.4827) .. (-0.1123,-0.4474)
5721 .. controls (-0.1220,-0.4442) and (-0.1279,-0.4432) .. (-0.1337,-0.4435)
5722 --cycle
5723 (-0.0033,-0.4457)
5724 .. controls (-0.0284,-0.4445) and (-0.0459,-0.4662) .. (-0.0273,-0.5141)
5725 -- ( 0.0660,-0.5141)
5726 .. controls ( 0.0545,-0.4708) and ( 0.0219,-0.4468) .. (-0.0033,-0.4457)

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5727 --cycle
5728 (-0.7383,-0.4470)
5729 -- (-0.7101,-0.4972)
5730 .. controls (-0.7099,-0.4756) and (-0.7233,-0.4577) .. (-0.7383,-0.4470)
5731 --cycle
5732 (-0.4942,-0.4548)
5733 -- (-0.4857,-0.5065)
5734 .. controls (-0.4998,-0.5043) and (-0.5212,-0.5004) .. (-0.5329,-0.5065)
5735 .. controls (-0.5629,-0.5229) and (-0.5515,-0.5662) .. (-0.5329,-0.5843)
5736 .. controls (-0.5068,-0.6075) and (-0.4879,-0.6033) .. (-0.4603,-0.5906)
5737 .. controls (-0.4787,-0.5639) and (-0.4791,-0.5620) .. (-0.5112,-0.5566)
5738 -- (-0.5112,-0.5396)
5739 .. controls (-0.4518,-0.5306) and (-0.4206,-0.4773) .. (-0.4942,-0.4548)
5740 --cycle
5741 ( 0.3377,-0.4548)
5742 .. controls ( 0.3023,-0.4717) and ( 0.2951,-0.4788) .. ( 0.2782,-0.5141)
5743 .. controls ( 0.3342,-0.5180) and ( 0.3822,-0.5526) .. ( 0.3886,-0.4717)
5744 -- ( 0.3631,-0.4972)
5745 --cycle
5746 ( 0.5663,-0.4671)
5747 .. controls ( 0.5583,-0.4668) and ( 0.5478,-0.4680) .. ( 0.5329,-0.4717)
5748 -- ( 0.5329,-0.4887)
5749 .. controls ( 0.5814,-0.5209) and ( 0.6607,-0.5778) .. ( 0.6687,-0.4802)
5750 -- ( 0.6201,-0.4852)
5751 .. controls ( 0.5908,-0.4828) and ( 0.5901,-0.4680) .. ( 0.5663,-0.4671)
5752 --cycle
5753 (-0.6640,-0.4802)
5754 .. controls (-0.6763,-0.5067) and (-0.6845,-0.5204) .. (-0.6886,-0.5355)
5755 -- (-0.6647,-0.5782)
5756 -- (-0.5876,-0.5396)
5757 .. controls (-0.6003,-0.5515) and (-0.6232,-0.5710) .. (-0.6310,-0.5860)
5758 .. controls (-0.6373,-0.5982) and (-0.6388,-0.6155) .. (-0.6360,-0.6294)
5759 -- (-0.6224,-0.6537)
5760 .. controls (-0.5951,-0.6768) and (-0.5385,-0.6561) .. (-0.5112,-0.6415)
5761 .. controls (-0.5400,-0.5996) and (-0.5579,-0.6048) .. (-0.6045,-0.6161)
5762 -- (-0.5621,-0.5651)
5763 -- (-0.5621,-0.5566)
5764 -- (-0.5791,-0.5481)
5765 -- (-0.5621,-0.5141)
5766 --cycle
5767 ( 0.1000,-0.4802)
5768 -- ( 0.0745,-0.5396)
5769 .. controls ( 0.1186,-0.5345) and ( 0.1548,-0.5114) .. ( 0.1000,-0.4802)
5770 --cycle
5771 ( 0.2188,-0.4802)
5772 -- ( 0.2358,-0.5141)
5773 -- ( 0.2358,-0.4802)
5774 --cycle
5775 ( 0.4310,-0.4802)
5776 -- ( 0.4140,-0.5311)
5777 -- ( 0.4140,-0.5396)
5778 -- ( 0.4310,-0.5566)
5779 .. controls ( 0.4679,-0.5313) and ( 0.4644,-0.5230) .. ( 0.4649,-0.4802)

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5780 --cycle
5781 ( 0.7111,-0.4802)
5782 -- ( 0.7111,-0.5059)
5783 -- ( 0.7261,-0.4802)
5784 --cycle
5785 (-0.3414,-0.4972)
5786 .. controls (-0.3911,-0.5256) and (-0.3704,-0.5729) .. (-0.3075,-0.5566)
5787 -- (-0.3075,-0.5396)
5788 --cycle
5789 (-0.4348,-0.5057)
5790 -- (-0.4348,-0.5736)
5791 .. controls (-0.4068,-0.5549) and (-0.4098,-0.5369) .. (-0.4008,-0.5057)
5792 --cycle
5793 ( 0.1509,-0.5311)
5794 -- ( 0.1254,-0.5736)
5795 -- ( 0.1849,-0.5651)
5796 --cycle
5797 ( 0.2273,-0.5311)
5798 -- ( 0.2103,-0.5975)
5799 .. controls ( 0.1971,-0.5957) and ( 0.1843,-0.5904) .. ( 0.1705,-0.5975)
5800 .. controls ( 0.1304,-0.6124) and ( 0.1679,-0.7346) .. ( 0.2142,-0.6893)
5801 .. controls ( 0.2226,-0.6812) and ( 0.2236,-0.6741) .. ( 0.2273,-0.6670)
5802 -- ( 0.1849,-0.6330)
5803 .. controls ( 0.2427,-0.6183) and ( 0.2598,-0.5884) .. ( 0.2443,-0.5311)
5804 --cycle
5805 ( 0.5074,-0.5311)
5806 .. controls ( 0.5252,-0.5626) and ( 0.5317,-0.5622) .. ( 0.5668,-0.5651)
5807 .. controls ( 0.5491,-0.5336) and ( 0.5426,-0.5340) .. ( 0.5074,-0.5311)
5808 --cycle
5809 ( 0.0269,-0.5388)
5810 .. controls ( 0.0166,-0.5396) and ( 0.0072,-0.5496) .. ( 0.0090,-0.5738)
5811 -- ( 0.0151,-0.5991)
5812 .. controls ( 0.0222,-0.5954) and ( 0.0287,-0.5947) .. ( 0.0377,-0.5860)
5813 .. controls ( 0.0637,-0.5611) and ( 0.0441,-0.5373) .. ( 0.0269,-0.5388)
5814 --cycle
5815 ( 0.2782,-0.5481)
5816 -- ( 0.2612,-0.5821)
5817 -- ( 0.3122,-0.6245)
5818 .. controls ( 0.3120,-0.5837) and ( 0.3197,-0.5648) .. ( 0.2782,-0.5481)
5819 --cycle
5820 (-0.2820,-0.5566)
5821 .. controls (-0.2791,-0.5918) and (-0.2795,-0.5983) .. (-0.2480,-0.6161)
5822 .. controls (-0.2450,-0.5789) and (-0.2492,-0.5737) .. (-0.2820,-0.5566)
5823 --cycle
5824 ( 0.3631,-0.5651)
5825 .. controls ( 0.3595,-0.5776) and ( 0.3566,-0.5855) .. ( 0.3557,-0.5990)
5826 .. controls ( 0.3500,-0.6875) and ( 0.4541,-0.6501) .. ( 0.3934,-0.5846)
5827 .. controls ( 0.3826,-0.5729) and ( 0.3761,-0.5717) .. ( 0.3631,-0.5651)
5828 --cycle
5829 ( 0.4330,-0.5736)
5830 -- ( 0.4330,-0.6379)
5831 .. controls ( 0.4274,-0.6731) and ( 0.3959,-0.6885) .. ( 0.4395,-0.7179)
5832 .. controls ( 0.4751,-0.6405) and ( 0.4954,-0.6629) .. ( 0.4480,-0.5736)

```

```

5833 --cycle
5834 ( 0.5329,-0.5821)
5835 .. controls ( 0.5362,-0.6232) and ( 0.5740,-0.6869) .. ( 0.6222,-0.6585)
5836 -- ( 0.6513,-0.6086)
5837 .. controls ( 0.6095,-0.6116) and ( 0.5939,-0.6354) .. ( 0.5668,-0.5821)
5838 --cycle
5839 ( 0.1000,-0.5906)
5840 -- ( 0.0830,-0.6245)
5841 -- ( 0.0575,-0.6161)
5842 .. controls ( 0.0477,-0.6898) and ( 0.1617,-0.6541) .. ( 0.1000,-0.5906)
5843 --cycle
5844 (-0.3245,-0.5991)
5845 .. controls (-0.3790,-0.5920) and (-0.3824,-0.6312) .. (-0.3839,-0.6754)
5846 -- (-0.3245,-0.6161)
5847 --cycle
5848 (-0.4348,-0.6076)
5849 -- (-0.4603,-0.6670)
5850 -- (-0.4942,-0.6585)
5851 -- (-0.5027,-0.6670)
5852 .. controls (-0.4589,-0.7510) and (-0.3531,-0.6544) .. (-0.4348,-0.6076)
5853 --cycle
5854 (-0.1377,-0.6076)
5855 .. controls (-0.1554,-0.6464) and (-0.1574,-0.6512) .. (-0.1292,-0.6839)
5856 -- (-0.1208,-0.6839)
5857 -- (-0.1038,-0.6670)
5858 -- (-0.1208,-0.6076)
5859 --cycle
5860 (-0.0698,-0.6161)
5861 -- (-0.0698,-0.6330)
5862 -- (-0.0019,-0.6330)
5863 -- (-0.0019,-0.6161)
5864 --cycle
5865 (-0.2735,-0.6330)
5866 .. controls (-0.3246,-0.6408) and (-0.3550,-0.6906) .. (-0.3754,-0.7356)
5867 -- (-0.3510,-0.7356)
5868 -- (-0.2786,-0.6658)
5869 --cycle
5870 (-0.1971,-0.6330)
5871 .. controls (-0.2393,-0.6535) and (-0.2774,-0.6931) .. (-0.2226,-0.7264)
5872 --cycle
5873 ( 0.2782,-0.6415)
5874 -- ( 0.2612,-0.6585)
5875 .. controls ( 0.2834,-0.6795) and ( 0.2819,-0.6792) .. ( 0.3122,-0.6754)
5876 -- ( 0.3122,-0.6585)
5877 --cycle
5878 ( 0.5244,-0.6630)
5879 .. controls ( 0.5103,-0.6630) and ( 0.4934,-0.6765) .. ( 0.4819,-0.6839)
5880 .. controls ( 0.4916,-0.7019) and ( 0.4915,-0.7036) .. ( 0.5078,-0.7175)
5881 -- ( 0.5293,-0.7332)
5882 .. controls ( 0.6028,-0.7786) and ( 0.5789,-0.6636) .. ( 0.5244,-0.6630)
5883 --cycle
5884 (-0.0698,-0.6839)
5885 -- (-0.0613,-0.7433)

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```

5886 -- (-0.0528,-0.7518)
5887 .. controls (-0.0005,-0.7307) and (-0.0190,-0.6844) .. (-0.0698,-0.6839)
5888 --cycle
5889 ( 0.1339,-0.6839)
5890 .. controls ( 0.0648,-0.6945) and ( 0.0512,-0.7734) .. ( 0.1169,-0.7943)
5891 .. controls ( 0.1059,-0.7314) and ( 0.1116,-0.7410) .. ( 0.1339,-0.6839)
5892 --cycle
5893 ( 0.3546,-0.6839)
5894 .. controls ( 0.3575,-0.7191) and ( 0.3571,-0.7256) .. ( 0.3886,-0.7433)
5895 -- ( 0.3716,-0.6839)
5896 --cycle
5897 ( 0.3886,-0.7433)
5898 -- ( 0.3886,-0.7603)
5899 -- ( 0.3546,-0.7943)
5900 -- ( 0.3631,-0.7943)
5901 -- ( 0.3801,-0.8113)
5902 .. controls ( 0.4252,-0.7878) and ( 0.4333,-0.7840) .. ( 0.4140,-0.7349)
5903 --cycle
5904 (-0.5653,-0.6922)
5905 .. controls (-0.5767,-0.6913) and (-0.5873,-0.6939) .. (-0.5981,-0.6969)
5906 -- (-0.5741,-0.7399)
5907 .. controls (-0.5528,-0.7446) and (-0.5350,-0.7433) .. (-0.5027,-0.7433)
5908 .. controls (-0.5172,-0.7077) and (-0.5409,-0.6942) .. (-0.5653,-0.6922)
5909 --cycle
5910 (-0.1547,-0.7099)
5911 .. controls (-0.1719,-0.7103) and (-0.1811,-0.7133) .. (-0.1971,-0.7179)
5912 .. controls (-0.1923,-0.7317) and (-0.1881,-0.7454) .. (-0.1792,-0.7574)
5913 .. controls (-0.1162,-0.8422) and (-0.0444,-0.7079) .. (-0.1547,-0.7099)
5914 --cycle
5915 (-0.4348,-0.7179)
5916 .. controls (-0.4394,-0.7549) and (-0.4359,-0.7636) .. (-0.4008,-0.7773)
5917 --cycle
5918 ( 0.2358,-0.7179)
5919 -- ( 0.2358,-0.7349)
5920 -- ( 0.3037,-0.7349)
5921 -- ( 0.3037,-0.7179)
5922 --cycle
5923 ( 0.4649,-0.7179)
5924 -- ( 0.4734,-0.7858)
5925 .. controls ( 0.4612,-0.7900) and ( 0.4516,-0.7918) .. ( 0.4409,-0.8004)
5926 .. controls ( 0.3964,-0.8360) and ( 0.4585,-0.8927) .. ( 0.4819,-0.8198)
5927 -- ( 0.5159,-0.8283)
5928 .. controls ( 0.5142,-0.8359) and ( 0.5131,-0.8417) .. ( 0.5125,-0.8468)
5929 -- ( 0.5398,-0.8000)
5930 .. controls ( 0.5329,-0.7638) and ( 0.5138,-0.7350) .. ( 0.4649,-0.7179)
5931 --cycle
5932 ( 0.2103,-0.7264)
5933 -- ( 0.1509,-0.7349)
5934 -- ( 0.1509,-0.7688)
5935 .. controls ( 0.1894,-0.7657) and ( 0.1982,-0.7645) .. ( 0.2103,-0.7264)
5936 --cycle
5937 (-0.2905,-0.7349)
5938 .. controls (-0.3009,-0.7717) and (-0.3009,-0.7829) .. (-0.2905,-0.8198)

```

```

5939 -- (-0.2480,-0.8028)
5940 -- (-0.2311,-0.8367)
5941 .. controls (-0.1820,-0.7845) and (-0.2454,-0.7805) .. (-0.2735,-0.7349)
5942 --cycle
5943 (-0.0019,-0.7349)
5944 .. controls (-0.0202,-0.7845) and (-0.0471,-0.8007) .. (-0.0358,-0.8537)
5945 -- ( 0.0066,-0.8113)
5946 -- ( 0.0236,-0.8113)
5947 .. controls ( 0.0412,-0.8384) and ( 0.0421,-0.8410) .. ( 0.0745,-0.8367)
5948 .. controls ( 0.0599,-0.7914) and ( 0.0500,-0.7437) .. (-0.0019,-0.7349)
5949 --cycle
5950 (-0.5282,-0.7688)
5951 .. controls (-0.5349,-0.8205) and (-0.5012,-0.8219) .. (-0.4603,-0.8113)
5952 -- (-0.4603,-0.7943)
5953 --cycle
5954 ( 0.3122,-0.7688)
5955 -- ( 0.3037,-0.7773)
5956 .. controls ( 0.3122,-0.8236) and ( 0.3093,-0.8598) .. ( 0.3608,-0.8698)
5957 -- ( 0.3628,-0.8698)
5958 -- ( 0.3292,-0.7688)
5959 --cycle
5960 (-0.3584,-0.7858)
5961 -- (-0.3770,-0.8622)
5962 .. controls (-0.3770,-0.8627) and (-0.3768,-0.8631) .. (-0.3768,-0.8636)
5963 -- (-0.3401,-0.8639)
5964 -- (-0.3245,-0.7858)
5965 --cycle
5966 ( 0.2612,-0.7858)
5967 .. controls ( 0.2125,-0.7858) and ( 0.1976,-0.7780) .. ( 0.1594,-0.8113)
5968 .. controls ( 0.2029,-0.8570) and ( 0.2552,-0.8596) .. ( 0.2612,-0.7858)
5969 --cycle
5970 (-0.1292,-0.7943)
5971 -- (-0.1886,-0.8537)
5972 .. controls (-0.1453,-0.8604) and (-0.1341,-0.8487) .. (-0.1038,-0.8198)
5973 --cycle
5974 (-0.4348,-0.8367)
5975 -- (-0.4479,-0.8630)
5976 -- (-0.4228,-0.8632)
5977 .. controls (-0.4191,-0.8583) and (-0.4180,-0.8505) .. (-0.4178,-0.8367)
5978 --cycle
5979 (-0.0783,-0.8452)
5980 .. controls (-0.0928,-0.8536) and (-0.0996,-0.8588) .. (-0.1026,-0.8659)
5981 -- (-0.0748,-0.8661)
5982 -- (-0.0698,-0.8537)
5983 --cycle
5984 ( 0.1503,-0.8501)
5985 .. controls ( 0.1440,-0.8514) and ( 0.1387,-0.8545) .. ( 0.1353,-0.8602)
5986 .. controls ( 0.1334,-0.8621) and ( 0.1330,-0.8649) .. ( 0.1333,-0.8679)
5987 -- ( 0.2103,-0.8685)
5988 -- ( 0.2103,-0.8602)
5989 .. controls ( 0.1968,-0.8575) and ( 0.1690,-0.8460) .. ( 0.1503,-0.8501)
5990 --cycle
5991 (-0.2396,-0.8622)

```

```

5992    -- (-0.2421,-0.8647)
5993    -- (-0.2217,-0.8649)
5994    .. controls (-0.2221,-0.8638) and (-0.2222,-0.8633) .. (-0.2226,-0.8622)
5995    --cycle
5996    ( 0.2867,-0.8622)
5997    .. controls ( 0.2782,-0.8636) and ( 0.2734,-0.8665) .. ( 0.2676,-0.8690)
5998    -- ( 0.2859,-0.8691)
5999    --cycle
6000    ( 0.3942,-0.8639)
6001    .. controls ( 0.3909,-0.8650) and ( 0.3884,-0.8678) .. ( 0.3855,-0.8700)
6002    -- ( 0.4192,-0.8703)
6003    .. controls ( 0.4168,-0.8684) and ( 0.4154,-0.8656) .. ( 0.4124,-0.8643)
6004    .. controls ( 0.4062,-0.8618) and ( 0.4000,-0.8619) .. ( 0.3942,-0.8639)
6005    --cycle
6006    ;
6007  }
6008 }
6009 \fi

```

hex/terrain/mountains

The style for mountains. The pattern is filled with a darker brown, and outlines are not drawn. Note that the mountain pattern is the same as the beach pattern, just with a different colour.

```

6010 \tikzset{
6011   hex/terrain/mountains/.style={
6012     draw=none,
6013     fill={rgb,100:red,49;green,35;blue,1}
6014   }
6015 }

```

hex/terrain/mountains

And the mountains pattern. This is the same as the beach pattern, only filled with a darker brown colour.



```

6016 \ifhex@terrain@pic
6017 \tikzset{
6018   hex/terrain/mountains/.pic={
6019     \path[hex/terrain/mountains,pic actions,draw=none]
6020       (-0.4931, 0.8848)
6021       -- (-0.4998, 0.8734)
6022       .. controls (-0.4908, 0.8731) and (-0.4813, 0.8762) .. (-0.4762, 0.8847)
6023       --cycle
6024       (-0.4032, 0.8841)
6025       .. controls (-0.4004, 0.8804) and (-0.3988, 0.8794) .. (-0.3956, 0.8745)
6026       .. controls (-0.3760, 0.8443) and (-0.3811, 0.8330) .. (-0.3456, 0.8112)

```

```

6027 .. controls (-0.3250, 0.7986) and (-0.2712, 0.7770) .. (-0.2531, 0.8032)
6028 .. controls (-0.2294, 0.8375) and (-0.2984, 0.8503) .. (-0.3193, 0.8690)
6029 .. controls (-0.3243, 0.8735) and (-0.3281, 0.8785) .. (-0.3321, 0.8835)
6030 --cycle
6031 (-0.2462, 0.8828)
6032 .. controls (-0.2425, 0.8681) and (-0.2383, 0.8546) .. (-0.2293, 0.8461)
6033 .. controls (-0.2102, 0.8280) and (-0.1892, 0.8390) .. (-0.1859, 0.8669)
6034 .. controls (-0.1854, 0.8711) and (-0.1871, 0.8772) .. (-0.1875, 0.8822)
6035 --cycle
6036 (-0.0997, 0.8815)
6037 .. controls (-0.0971, 0.8706) and (-0.0941, 0.8597) .. (-0.0907, 0.8493)
6038 -- (-0.0570, 0.8578)
6039 .. controls (-0.0570, 0.8629) and (-0.0560, 0.8730) .. (-0.0553, 0.8812)
6040 --cycle
6041 ( 0.0213, 0.8805)
6042 .. controls ( 0.0222, 0.8725) and ( 0.0235, 0.8650) .. ( 0.0262, 0.8587)
6043 .. controls ( 0.0391, 0.8281) and ( 0.0706, 0.8199) .. ( 0.0917, 0.7894)
6044 .. controls ( 0.1112, 0.7609) and ( 0.1058, 0.7286) .. ( 0.1050, 0.6961)
6045 -- ( 0.1731, 0.7216)
6046 -- ( 0.1203, 0.8649)
6047 -- ( 0.1097, 0.8797)
6048 --cycle
6049 ( 0.2978, 0.8781)
6050 .. controls ( 0.2985, 0.8773) and ( 0.3002, 0.8756) .. ( 0.3008, 0.8749)
6051 .. controls ( 0.2854, 0.8687) and ( 0.2549, 0.8572) .. ( 0.2421, 0.8487)
6052 .. controls ( 0.2026, 0.8224) and ( 0.1905, 0.7567) .. ( 0.2046, 0.7132)
6053 .. controls ( 0.2146, 0.6819) and ( 0.2330, 0.6680) .. ( 0.2394, 0.6280)
6054 .. controls ( 0.2413, 0.6160) and ( 0.2468, 0.5527) .. ( 0.2446, 0.5437)
6055 .. controls ( 0.2396, 0.5232) and ( 0.2211, 0.5122) .. ( 0.2231, 0.4913)
6056 .. controls ( 0.2261, 0.4603) and ( 0.2686, 0.4388) .. ( 0.2891, 0.4194)
6057 .. controls ( 0.3020, 0.4071) and ( 0.3136, 0.3895) .. ( 0.3281, 0.3799)
6058 .. controls ( 0.3688, 0.3533) and ( 0.3905, 0.3863) .. ( 0.4199, 0.3902)
6059 .. controls ( 0.4350, 0.3921) and ( 0.4560, 0.3849) .. ( 0.4710, 0.3812)
6060 -- ( 0.4795, 0.4067)
6061 -- ( 0.4965, 0.4067)
6062 .. controls ( 0.5008, 0.3961) and ( 0.5009, 0.3893) .. ( 0.5112, 0.3811)
6063 .. controls ( 0.5112, 0.3811) and ( 0.6172, 0.3385) .. ( 0.6481, 0.3037)
6064 .. controls ( 0.6729, 0.2758) and ( 0.6641, 0.2532) .. ( 0.6667, 0.2206)
6065 -- ( 0.7004, 0.2206)
6066 .. controls ( 0.7839, 0.2118) and ( 0.7047, 0.0740) .. ( 0.7057, 0.0568)
6067 .. controls ( 0.7067, 0.0396) and ( 0.7865,-0.0424) .. ( 0.8032,-0.0520)
6068 .. controls ( 0.8251,-0.0644) and ( 0.8703,-0.0686) .. ( 0.8572,-0.0293)
6069 .. controls ( 0.8518,-0.0131) and ( 0.7996, 0.0474) .. ( 0.7843, 0.0564)
6070 .. controls ( 0.7724, 0.0633) and ( 0.7645, 0.0636) .. ( 0.7518, 0.0664)
6071 .. controls ( 0.7688, 0.1093) and ( 0.7993, 0.1905) .. ( 0.7930, 0.2362)
6072 .. controls ( 0.7869, 0.2804) and ( 0.7252, 0.2982) .. ( 0.6946, 0.3268)
6073 .. controls ( 0.6664, 0.3531) and ( 0.6746, 0.3662) .. ( 0.6323, 0.3966)
6074 .. controls ( 0.5760, 0.4371) and ( 0.5386, 0.4324) .. ( 0.5250, 0.4601)
6075 .. controls ( 0.5090, 0.4927) and ( 0.5578, 0.6035) .. ( 0.5969, 0.5911)
6076 .. controls ( 0.6199, 0.5839) and ( 0.6224, 0.5471) .. ( 0.6341, 0.5291)
6077 .. controls ( 0.6488, 0.5064) and ( 0.7020, 0.4614) .. ( 0.7263, 0.4493)
6078 -- ( 0.7373, 0.4768)
6079 -- ( 0.6866, 0.5671)

```

```

6080 -- ( 0.6756, 0.5720)
6081 -- ( 0.6766, 0.5850)
6082 -- ( 0.6331, 0.6627)
6083 .. controls ( 0.6280, 0.6613) and ( 0.6239, 0.6599) .. ( 0.6157, 0.6589)
6084 -- ( 0.5646, 0.6589)
6085 .. controls ( 0.5375, 0.6557) and ( 0.5277, 0.6432) .. ( 0.4965, 0.6489)
6086 .. controls ( 0.4716, 0.6520) and ( 0.4306, 0.6774) .. ( 0.4104, 0.6489)
6087 .. controls ( 0.3809, 0.6093) and ( 0.4627, 0.6240) .. ( 0.4837, 0.5772)
6088 .. controls ( 0.4958, 0.5502) and ( 0.4652, 0.4811) .. ( 0.4429, 0.4648)
6089 -- ( 0.3523, 0.4350)
6090 .. controls ( 0.3178, 0.4372) and ( 0.3207, 0.4766) .. ( 0.3153, 0.5004)
6091 .. controls ( 0.3090, 0.5282) and ( 0.2968, 0.5398) .. ( 0.2922, 0.5684)
6092 .. controls ( 0.2896, 0.6035) and ( 0.3061, 0.6276) .. ( 0.2922, 0.6621)
6093 .. controls ( 0.2756, 0.6961) and ( 0.2422, 0.7190) .. ( 0.2525, 0.7640)
6094 .. controls ( 0.2650, 0.8188) and ( 0.3165, 0.7932) .. ( 0.3324, 0.8417)
6095 .. controls ( 0.3359, 0.8522) and ( 0.3385, 0.8648) .. ( 0.3399, 0.8778)
6096 --cycle
6097 ( 0.4261, 0.8770)
6098 -- ( 0.4333, 0.8493)
6099 -- ( 0.4845, 0.7440)
6100 .. controls ( 0.4963, 0.7304) and ( 0.5450, 0.6930) .. ( 0.5630, 0.6989)
6101 .. controls ( 0.5735, 0.7024) and ( 0.5838, 0.7169) .. ( 0.5932, 0.7337)
6102 -- ( 0.5612, 0.7909)
6103 .. controls ( 0.5537, 0.7875) and ( 0.5468, 0.7852) .. ( 0.5403, 0.7864)
6104 .. controls ( 0.5078, 0.7926) and ( 0.5191, 0.8406) .. ( 0.5145, 0.8567)
6105 .. controls ( 0.5121, 0.8651) and ( 0.5076, 0.8710) .. ( 0.5025, 0.8764)
6106 --cycle
6107 ( 0.3773, 0.8153)
6108 .. controls ( 0.3625, 0.7892) and ( 0.2993, 0.7161) .. ( 0.3316, 0.6877)
6109 .. controls ( 0.3432, 0.6774) and ( 0.3866, 0.6728) .. ( 0.4029, 0.6706)
6110 -- ( 0.3973, 0.7472)
6111 -- ( 0.4029, 0.8153)
6112 --cycle
6113 (-0.4224, 0.8088)
6114 .. controls (-0.4416, 0.8077) and (-0.4585, 0.7826) .. (-0.4275, 0.7562)
6115 -- (-0.3971, 0.7387)
6116 .. controls (-0.4780, 0.6942) and (-0.4752, 0.6640) .. (-0.4591, 0.5855)
6117 .. controls (-0.4391, 0.4887) and (-0.4527, 0.5347) .. (-0.4103, 0.4493)
6118 .. controls (-0.3870, 0.4026) and (-0.4070, 0.3747) .. (-0.3460, 0.3642)
6119 -- (-0.3352, 0.4823)
6120 .. controls (-0.3409, 0.5024) and (-0.3617, 0.5113) .. (-0.3739, 0.5281)
6121 -- (-0.4164, 0.6287)
6122 .. controls (-0.4188, 0.6375) and (-0.4186, 0.6444) .. (-0.4164, 0.6528)
6123 .. controls (-0.4067, 0.6807) and (-0.3521, 0.7255) .. (-0.3274, 0.6931)
6124 .. controls (-0.3070, 0.6694) and (-0.3336, 0.6432) .. (-0.3274, 0.6221)
6125 .. controls (-0.3249, 0.6055) and (-0.3059, 0.6028) .. (-0.2950, 0.6162)
6126 .. controls (-0.2867, 0.6265) and (-0.2838, 0.6558) .. (-0.2829, 0.6692)
6127 .. controls (-0.2775, 0.7444) and (-0.3333, 0.7652) .. (-0.3955, 0.7472)
6128 .. controls (-0.3950, 0.7586) and (-0.3916, 0.7684) .. (-0.3955, 0.7803)
6129 .. controls (-0.3986, 0.8016) and (-0.4109, 0.8096) .. (-0.4224, 0.8088)
6130 --cycle
6131 (-0.1391, 0.8077)
6132 .. controls (-0.1634, 0.8024) and (-0.1582, 0.7647) .. (-0.1487, 0.7492)

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6133 .. controls (-0.1306, 0.7190) and (-0.1004, 0.7270) .. (-0.0652, 0.7073)
6134 -- (-0.0226, 0.6801)
6135 -- ( 0.0282, 0.6560)
6136 .. controls ( 0.0622, 0.6331) and ( 0.0955, 0.5639) .. ( 0.1219, 0.5259)
6137 .. controls ( 0.2125, 0.5714) and ( 0.1427, 0.6114) .. ( 0.1219, 0.6453)
6138 -- ( 0.1054, 0.6768)
6139 .. controls ( 0.0862, 0.7028) and ( 0.0448, 0.7080) .. ( 0.0115, 0.7299)
6140 .. controls (-0.0377, 0.7622) and (-0.0173, 0.7726) .. (-0.0822, 0.7918)
6141 .. controls (-0.0961, 0.7958) and (-0.1270, 0.8103) .. (-0.1391, 0.8077)
6142 --cycle
6143 (-0.5460, 0.7940)
6144 -- (-0.5911, 0.7166)
6145 .. controls (-0.5649, 0.7015) and (-0.5397, 0.7188) .. (-0.5308, 0.7556)
6146 .. controls (-0.5251, 0.7788) and (-0.5335, 0.7873) .. (-0.5460, 0.7940)
6147 --cycle
6148 (-0.2382, 0.7423)
6149 .. controls (-0.2453, 0.7424) and (-0.2512, 0.7383) .. (-0.2550, 0.7274)
6150 .. controls (-0.2635, 0.7026) and (-0.2353, 0.6726) .. (-0.2229, 0.6536)
6151 .. controls (-0.2031, 0.6234) and (-0.2020, 0.6105) .. (-0.1928, 0.5770)
6152 .. controls (-0.1763, 0.5803) and (-0.1499, 0.5890) .. (-0.1342, 0.5831)
6153 .. controls (-0.1112, 0.5745) and (-0.1047, 0.5481) .. (-0.0866, 0.5338)
6154 -- (-0.0397, 0.5102)
6155 -- ( 0.0664, 0.4219)
6156 .. controls ( 0.0874, 0.3954) and ( 0.0785, 0.3655) .. ( 0.1070, 0.3502)
6157 .. controls ( 0.1367, 0.3343) and ( 0.1690, 0.3592) .. ( 0.1732, 0.3899)
6158 .. controls ( 0.1755, 0.4075) and ( 0.1545, 0.4554) .. ( 0.1475, 0.4748)
6159 .. controls ( 0.0838, 0.4666) and ( 0.0509, 0.4836) .. ( 0.0454, 0.5515)
6160 .. controls (-0.0576, 0.5778) and (-0.0955, 0.6323) .. (-0.1754, 0.6949)
6161 .. controls (-0.1861, 0.7034) and (-0.2171, 0.7418) .. (-0.2382, 0.7423)
6162 --cycle
6163 (-0.5068, 0.6706)
6164 .. controls (-0.5119, 0.6724) and (-0.5194, 0.6726) .. (-0.5299, 0.6701)
6165 .. controls (-0.5512, 0.6413) and (-0.5242, 0.6333) .. (-0.5102, 0.6400)
6166 .. controls (-0.4981, 0.6457) and (-0.4916, 0.6653) .. (-0.5068, 0.6706)
6167 --cycle
6168 (-0.6356, 0.6402)
6169 -- (-0.6681, 0.5845)
6170 -- (-0.6588, 0.5684)
6171 .. controls (-0.6473, 0.5521) and (-0.6323, 0.5371) .. (-0.6265, 0.5174)
6172 .. controls (-0.6174, 0.4865) and (-0.6614, 0.4161) .. (-0.6950, 0.4206)
6173 .. controls (-0.7111, 0.4226) and (-0.7174, 0.4376) .. (-0.7460, 0.4507)
6174 -- (-0.7632, 0.4212)
6175 .. controls (-0.7629, 0.4042) and (-0.7611, 0.3875) .. (-0.7546, 0.3789)
6176 .. controls (-0.7424, 0.3626) and (-0.7129, 0.3612) .. (-0.6966, 0.3297)
6177 .. controls (-0.6823, 0.3022) and (-0.6963, 0.2741) .. (-0.6808, 0.2598)
6178 .. controls (-0.6602, 0.2410) and (-0.6495, 0.2720) .. (-0.6484, 0.2878)
6179 .. controls (-0.6461, 0.3229) and (-0.6488, 0.4046) .. (-0.6080, 0.4204)
6180 .. controls (-0.5750, 0.4330) and (-0.4980, 0.3514) .. (-0.4929, 0.3217)
6181 .. controls (-0.4895, 0.3019) and (-0.5044, 0.2671) .. (-0.4860, 0.2550)
6182 .. controls (-0.4691, 0.2439) and (-0.4582, 0.2679) .. (-0.4535, 0.2796)
6183 .. controls (-0.4450, 0.3015) and (-0.4273, 0.3562) .. (-0.4401, 0.3771)
6184 .. controls (-0.4495, 0.3922) and (-0.5019, 0.4172) .. (-0.5296, 0.4507)
6185 .. controls (-0.5656, 0.4941) and (-0.5734, 0.5631) .. (-0.5973, 0.6021)

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6186 .. controls (-0.6099, 0.6226) and (-0.6226, 0.6316) .. (-0.6356, 0.6402)
6187 --cycle
6188 ( 0.2242, 0.6110)
6189 -- ( 0.1816, 0.6025)
6190 -- ( 0.1816, 0.5855)
6191 .. controls ( 0.2117, 0.5815) and ( 0.2140, 0.5821) .. ( 0.2242, 0.6110)
6192 --cycle
6193 ( 0.3924, 0.6049)
6194 .. controls ( 0.3895, 0.6048) and ( 0.3860, 0.6036) .. ( 0.3820, 0.6011)
6195 .. controls ( 0.3535, 0.5835) and ( 0.3670, 0.5238) .. ( 0.3773, 0.5004)
6196 -- ( 0.3944, 0.5004)
6197 -- ( 0.4061, 0.5429)
6198 .. controls ( 0.4082, 0.5540) and ( 0.4130, 0.6056) .. ( 0.3924, 0.6049)
6199 --cycle
6200 (-0.2864, 0.5940)
6201 .. controls (-0.2904, 0.5793) and (-0.2950, 0.5676) .. (-0.2919, 0.5518)
6202 .. controls (-0.2769, 0.4768) and (-0.1616, 0.5041) .. (-0.2162, 0.5623)
6203 .. controls (-0.2236, 0.5702) and (-0.2346, 0.5747) .. (-0.2443, 0.5790)
6204 --cycle
6205 (-0.7010, 0.5280)
6206 -- (-0.7269, 0.4835)
6207 .. controls (-0.7207, 0.4876) and (-0.7144, 0.4952) .. (-0.7081, 0.5094)
6208 --cycle
6209 (-0.0992, 0.4748)
6210 -- (-0.2099, 0.4556)
6211 -- (-0.2888, 0.3790)
6212 -- (-0.3460, 0.3557)
6213 -- (-0.3389, 0.3218)
6214 .. controls (-0.3310, 0.2959) and (-0.3026, 0.2636) .. (-0.2781, 0.2927)
6215 .. controls (-0.2745, 0.2971) and (-0.2504, 0.3947) .. (-0.1948, 0.3764)
6216 .. controls (-0.1607, 0.3651) and (-0.1697, 0.2984) .. (-0.1588, 0.2536)
6217 -- (-0.1503, 0.2536)
6218 -- (-0.1503, 0.2450)
6219 -- (-0.1163, 0.2366)
6220 .. controls (-0.0968, 0.3059) and (-0.1262, 0.3371) .. (-0.1239, 0.3982)
6221 .. controls (-0.1229, 0.4261) and (-0.1067, 0.4484) .. (-0.0992, 0.4748)
6222 --cycle
6223 (-0.1503, 0.2450)
6224 -- (-0.1588, 0.2536)
6225 .. controls (-0.2292, 0.2544) and (-0.2730, 0.2893) .. (-0.2677, 0.2195)
6226 -- (-0.2609, 0.1855)
6227 .. controls (-0.2393, 0.1890) and (-0.2005, 0.2039) .. (-0.1909, 0.1753)
6228 .. controls (-0.1709, 0.1163) and (-0.2582, 0.0953) .. (-0.2387, 0.0533)
6229 .. controls (-0.2275, 0.0292) and (-0.1430, 0.0537) .. (-0.1361, 0.0692)
6230 .. controls (-0.1250, 0.0859) and (-0.1359, 0.1083) .. (-0.1361, 0.1259)
6231 .. controls (-0.1437, 0.1788) and (-0.1186, 0.1766) .. (-0.1503, 0.2450)
6232 --cycle
6233 ( 0.7348, 0.4408)
6234 .. controls ( 0.7113, 0.3774) and ( 0.7569, 0.3513) .. ( 0.7901, 0.3824)
6235 -- ( 0.7585, 0.4390)
6236 --cycle
6237 ( 0.2071, 0.4153)
6238 .. controls ( 0.1984, 0.3706) and ( 0.2118, 0.3204) .. ( 0.2582, 0.3046)

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6239 .. controls ( 0.2685, 0.3631) and ( 0.2706, 0.3931) .. ( 0.2071, 0.4153)
6240 --cycle
6241 (-0.0567, 0.3982)
6242 .. controls (-0.0558, 0.3230) and (-0.0460, 0.3456) .. (-0.0210, 0.2876)
6243 -- ( 0.0067, 0.1940)
6244 .. controls ( 0.0180, 0.1513) and ( 0.0026, 0.1332) .. ( 0.0454, 0.1089)
6245 -- ( 0.0767, 0.1940)
6246 -- ( 0.0546, 0.2621)
6247 -- ( 0.0406, 0.3185)
6248 -- (-0.0258, 0.3896)
6249 --cycle
6250 (-0.7969, 0.3634)
6251 -- (-0.8570, 0.2602)
6252 .. controls (-0.8515, 0.2550) and (-0.8469, 0.2514) .. (-0.8414, 0.2450)
6253 .. controls (-0.8020, 0.1990) and (-0.8201, 0.1971) .. (-0.7629, 0.1540)
6254 .. controls (-0.7462, 0.1414) and (-0.7054, 0.1023) .. (-0.6834, 0.1181)
6255 .. controls (-0.6662, 0.1304) and (-0.6813, 0.1625) .. (-0.6882, 0.1768)
6256 .. controls (-0.7213, 0.2456) and (-0.7865, 0.2417) .. (-0.8004, 0.2965)
6257 .. controls (-0.8052, 0.3154) and (-0.7990, 0.3413) .. (-0.7969, 0.3634)
6258 --cycle
6259 ( 0.8244, 0.3214)
6260 .. controls ( 0.8136, 0.3128) and ( 0.8080, 0.2984) .. ( 0.8114, 0.2706)
6261 .. controls ( 0.8314, 0.2739) and ( 0.8424, 0.2735) .. ( 0.8526, 0.2710)
6262 --cycle
6263 ( 0.5015, 0.3207)
6264 .. controls ( 0.4943, 0.3196) and ( 0.4861, 0.3171) .. ( 0.4766, 0.3130)
6265 .. controls ( 0.4611, 0.2827) and ( 0.4839, 0.2747) .. ( 0.5028, 0.2521)
6266 -- ( 0.5376, 0.1972)
6267 .. controls ( 0.5529, 0.1772) and ( 0.5728, 0.1698) .. ( 0.5845, 0.1426)
6268 .. controls ( 0.5979, 0.1115) and ( 0.5837, 0.0732) .. ( 0.5987, 0.0532)
6269 .. controls ( 0.6095, 0.0384) and ( 0.6236, 0.0428) .. ( 0.6350, 0.0532)
6270 .. controls ( 0.6681, 0.0842) and ( 0.6456, 0.1087) .. ( 0.6482, 0.1429)
6271 .. controls ( 0.6481, 0.1614) and ( 0.6596, 0.1802) .. ( 0.6482, 0.1967)
6272 .. controls ( 0.6390, 0.2131) and ( 0.5992, 0.2239) .. ( 0.5768, 0.2483)
6273 .. controls ( 0.5547, 0.2722) and ( 0.5524, 0.3288) .. ( 0.5015, 0.3207)
6274 --cycle
6275 (-0.5678, 0.3115)
6276 .. controls (-0.5832, 0.3118) and (-0.6140, 0.2810) .. (-0.6269, 0.2706)
6277 .. controls (-0.6185, 0.2412) and (-0.5926, 0.1953) .. (-0.5973, 0.1685)
6278 .. controls (-0.6029, 0.1373) and (-0.6320, 0.1239) .. (-0.6369, 0.0996)
6279 .. controls (-0.6406, 0.0816) and (-0.6303, 0.0652) .. (-0.6237, 0.0493)
6280 .. controls (-0.6147, 0.0275) and (-0.6000,-0.0443) .. (-0.5641,-0.0258)
6281 .. controls (-0.5134,-0.0018) and (-0.5902, 0.0606) .. (-0.5641, 0.1074)
6282 .. controls (-0.5332, 0.1697) and (-0.4913, 0.1444) .. (-0.4481, 0.1593)
6283 .. controls (-0.3913, 0.1792) and (-0.3439, 0.2446) .. (-0.3545, 0.3046)
6284 -- (-0.4568, 0.2201)
6285 -- (-0.5588, 0.2201)
6286 .. controls (-0.5549, 0.2390) and (-0.5305, 0.3109) .. (-0.5678, 0.3115)
6287 --cycle
6288 ( 0.2243, 0.2813)
6289 -- ( 0.1631, 0.2450)
6290 -- ( 0.0965, 0.2281)
6291 -- ( 0.1689, 0.1131)

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6292 -- ( 0.2065, 0.0861)
6293 .. controls ( 0.2453, 0.0564) and ( 0.2384, 0.0410) .. ( 0.2923, 0.0323)
6294 -- ( 0.2988,-0.0188)
6295 .. controls ( 0.2994,-0.0695) and ( 0.2657,-0.0796) .. ( 0.2249,-0.0579)
6296 .. controls ( 0.1337,-0.0093) and ( 0.1545, 0.0219) .. ( 0.1102, 0.0744)
6297 .. controls ( 0.0914, 0.0967) and ( 0.0807, 0.1010) .. ( 0.0539, 0.1089)
6298 .. controls ( 0.0562, 0.0613) and ( 0.0756,-0.0434) .. ( 0.0403,-0.0825)
6299 .. controls ( 0.0293,-0.0948) and (-0.0336,-0.1168) .. (-0.0567,-0.1294)
6300 .. controls (-0.0615,-0.1087) and (-0.0777,-0.0729) .. (-0.0703,-0.0546)
6301 .. controls (-0.0586,-0.0251) and ( 0.0562, 0.0040) .. (-0.0152, 0.0389)
6302 -- (-0.0397, 0.0480)
6303 -- (-0.0737, 0.0578)
6304 .. controls (-0.0806, 0.0391) and (-0.0849, 0.0192) .. (-0.1018, 0.0068)
6305 .. controls (-0.1154,-0.0032) and (-0.1352,-0.0018) .. (-0.1438,-0.0212)
6306 .. controls (-0.1562,-0.0491) and (-0.1117,-0.1243) .. (-0.0874,-0.1373)
6307 .. controls (-0.0745,-0.1434) and (-0.0687,-0.1394) .. (-0.0567,-0.1373)
6308 .. controls (-0.0358,-0.2033) and (-0.0062,-0.1612) .. ( 0.0370,-0.1500)
6309 -- ( 0.1050,-0.1379)
6310 .. controls ( 0.0882,-0.0871) and ( 0.0808,-0.0999) .. ( 0.0965,-0.0443)
6311 .. controls ( 0.1454,-0.0619) and ( 0.1336,-0.0743) .. ( 0.1664,-0.0940)
6312 .. controls ( 0.1897,-0.1081) and ( 0.2226,-0.1052) .. ( 0.2361,-0.1388)
6313 .. controls ( 0.2495,-0.1724) and ( 0.2245,-0.1963) .. ( 0.2412,-0.2584)
6314 .. controls ( 0.2526,-0.2569) and ( 0.2622,-0.2548) .. ( 0.2735,-0.2584)
6315 .. controls ( 0.2987,-0.2708) and ( 0.3225,-0.3241) .. ( 0.3212,-0.3506)
6316 .. controls ( 0.3203,-0.3711) and ( 0.3053,-0.3950) .. ( 0.3008,-0.4443)
6317 -- ( 0.2497,-0.4187)
6318 .. controls ( 0.2599,-0.4479) and ( 0.2621,-0.4475) .. ( 0.2905,-0.4528)
6319 .. controls ( 0.2877,-0.4715) and ( 0.2799,-0.4998) .. ( 0.2905,-0.5182)
6320 .. controls ( 0.2991,-0.5392) and ( 0.3228,-0.5357) .. ( 0.3346,-0.5182)
6321 .. controls ( 0.3506,-0.4943) and ( 0.3355,-0.4515) .. ( 0.3532,-0.4203)
6322 .. controls ( 0.3716,-0.3881) and ( 0.4096,-0.3844) .. ( 0.4084,-0.3499)
6323 .. controls ( 0.4074,-0.3241) and ( 0.3866,-0.3087) .. ( 0.3728,-0.2897)
6324 -- ( 0.3426,-0.2337)
6325 -- ( 0.2989,-0.1879)
6326 .. controls ( 0.2810,-0.1587) and ( 0.2976,-0.1327) .. ( 0.3187,-0.1323)
6327 .. controls ( 0.3342,-0.1319) and ( 0.3489,-0.1451) .. ( 0.3603,-0.1541)
6328 .. controls ( 0.3817,-0.1712) and ( 0.4026,-0.1894) .. ( 0.4144,-0.2146)
6329 .. controls ( 0.4299,-0.2477) and ( 0.4289,-0.2977) .. ( 0.4712,-0.3110)
6330 .. controls ( 0.4957,-0.3188) and ( 0.5167,-0.3024) .. ( 0.5044,-0.2753)
6331 .. controls ( 0.4967,-0.2585) and ( 0.4769,-0.2471) .. ( 0.4676,-0.2227)
6332 .. controls ( 0.4582,-0.1981) and ( 0.4681,-0.1743) .. ( 0.4488,-0.1492)
6333 .. controls ( 0.4286,-0.1227) and ( 0.3809,-0.1095) .. ( 0.3621,-0.0696)
6334 .. controls ( 0.3402,-0.0230) and ( 0.3896, 0.0270) .. ( 0.3092, 0.0408)
6335 -- ( 0.3532, 0.1933)
6336 -- ( 0.3944, 0.2536)
6337 -- ( 0.3433, 0.2765)
6338 --cycle
6339 ( 0.2497, 0.2450)
6340 -- ( 0.2782, 0.2025)
6341 .. controls ( 0.2843, 0.1911) and ( 0.2884, 0.1815) .. ( 0.2900, 0.1685)
6342 .. controls ( 0.3021, 0.0654) and ( 0.1495, 0.1479) .. ( 0.2135, 0.2245)
6343 .. controls ( 0.2246, 0.2378) and ( 0.2346, 0.2396) .. ( 0.2497, 0.2450)
6344 --cycle

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6345 ( 0.8836, 0.2157)
6346 .. controls ( 0.8688, 0.2061) and ( 0.8571, 0.1889) .. ( 0.8687, 0.1736)
6347 .. controls ( 0.8785, 0.1608) and ( 0.8967, 0.1613) .. ( 0.9161, 0.1578)
6348 --cycle
6349 (-0.3035, 0.1940)
6350 .. controls (-0.3340, 0.1390) and (-0.3508, 0.1491) .. (-0.3624, 0.1300)
6351 .. controls (-0.3738, 0.1112) and (-0.3588, 0.0896) .. (-0.3288, 0.0972)
6352 .. controls (-0.2842, 0.1084) and (-0.2392, 0.1714) .. (-0.3035, 0.1940)
6353 --cycle
6354 ( 0.4710, 0.1940)
6355 .. controls ( 0.4330, 0.1525) and ( 0.3961, 0.1447) .. ( 0.4114, 0.0833)
6356 .. controls ( 0.4294, 0.0897) and ( 0.4596, 0.1056) .. ( 0.4776, 0.0984)
6357 .. controls ( 0.5010, 0.0888) and ( 0.5182, 0.0420) .. ( 0.4925, 0.0231)
6358 .. controls ( 0.4698, 0.0064) and ( 0.4500, 0.0299) .. ( 0.3944, 0.0153)
6359 .. controls ( 0.4243,-0.0189) and ( 0.4618,-0.0333) .. ( 0.4765,-0.0621)
6360 .. controls ( 0.4928,-0.0939) and ( 0.4729,-0.1183) .. ( 0.4881,-0.1406)
6361 .. controls ( 0.4977,-0.1549) and ( 0.5241,-0.1630) .. ( 0.5425,-0.1894)
6362 .. controls ( 0.5557,-0.2085) and ( 0.5562,-0.2282) .. ( 0.5657,-0.2485)
6363 -- ( 0.6122,-0.3251)
6364 .. controls ( 0.6335,-0.3720) and ( 0.6160,-0.3973) .. ( 0.6323,-0.4443)
6365 .. controls ( 0.6532,-0.5042) and ( 0.6754,-0.5231) .. ( 0.6973,-0.5440)
6366 -- ( 0.7289,-0.4899)
6367 .. controls ( 0.7138,-0.4739) and ( 0.6992,-0.4579) .. ( 0.6886,-0.4358)
6368 -- ( 0.6489,-0.2690)
6369 .. controls ( 0.6485,-0.2445) and ( 0.6654,-0.2180) .. ( 0.6598,-0.2002)
6370 .. controls ( 0.6522,-0.1752) and ( 0.6202,-0.1899) .. ( 0.5938,-0.1612)
6371 .. controls ( 0.5619,-0.1263) and ( 0.5907,-0.0980) .. ( 0.5797,-0.0720)
6372 .. controls ( 0.5714,-0.0525) and ( 0.5434,-0.0441) .. ( 0.5374,-0.0184)
6373 .. controls ( 0.5319, 0.0056) and ( 0.5522, 0.0300) .. ( 0.5533, 0.0578)
6374 .. controls ( 0.5548, 0.0943) and ( 0.4981, 0.1701) .. ( 0.4710, 0.1940)
6375 --cycle
6376 (-0.9001, 0.1862)
6377 -- (-0.9386, 0.1201)
6378 .. controls (-0.9374, 0.1181) and (-0.9371, 0.1158) .. (-0.9356, 0.1139)
6379 .. controls (-0.9242, 0.0996) and (-0.9046, 0.0893) .. (-0.8911, 0.0660)
6380 .. controls (-0.8684, 0.0268) and (-0.8960, 0.0297) .. (-0.8592,-0.0296)
6381 .. controls (-0.8262,-0.0830) and (-0.8655,-0.1092) .. (-0.7971,-0.1209)
6382 -- (-0.7875, 0.0068)
6383 -- (-0.8579, 0.1174)
6384 --cycle
6385 (-0.4453, 0.0979)
6386 .. controls (-0.4922, 0.0916) and (-0.4988, 0.0347) .. (-0.4759, 0.0116)
6387 .. controls (-0.4491,-0.0149) and (-0.4165, 0.0208) .. (-0.3900, 0.0116)
6388 .. controls (-0.3555,-0.0011) and (-0.3800,-0.0410) .. (-0.3751,-0.0698)
6389 -- (-0.3537,-0.1294)
6390 .. controls (-0.3428,-0.1879) and (-0.4042,-0.1777) .. (-0.3801,-0.2656)
6391 .. controls (-0.3617,-0.2531) and (-0.3352,-0.2292) .. (-0.3122,-0.2330)
6392 .. controls (-0.2845,-0.2375) and (-0.2669,-0.2694) .. (-0.2543,-0.2911)
6393 .. controls (-0.2183,-0.3533) and (-0.2004,-0.3613) .. (-0.2184,-0.4358)
6394 .. controls (-0.3300,-0.4097) and (-0.2723,-0.5065) .. (-0.2483,-0.5549)
6395 -- (-0.2129,-0.6314)
6396 .. controls (-0.2017,-0.6508) and (-0.1900,-0.6661) .. (-0.1670,-0.6712)
6397 .. controls (-0.1211,-0.6813) and (-0.1100,-0.6527) .. (-0.1163,-0.6145)

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6398 .. controls (-0.1327,-0.6119) and (-0.1427,-0.6118) .. (-0.1568,-0.6009)
6399 .. controls (-0.1780,-0.5845) and (-0.2123,-0.5041) .. (-0.2042,-0.4783)
6400 .. controls (-0.1947,-0.4484) and (-0.1575,-0.4121) .. (-0.1333,-0.3932)
6401 -- (-0.1527,-0.3251)
6402 -- (-0.1588,-0.2656)
6403 .. controls (-0.2187,-0.2715) and (-0.2083,-0.2536) .. (-0.2457,-0.2163)
6404 .. controls (-0.2684,-0.1935) and (-0.2911,-0.1886) .. (-0.2996,-0.1546)
6405 -- (-0.2996,-0.1209)
6406 -- (-0.3232,-0.0698)
6407 .. controls (-0.3283,-0.0435) and (-0.3124,-0.0260) .. (-0.3175,-0.0041)
6408 .. controls (-0.3251, 0.0283) and (-0.3891, 0.0917) .. (-0.4227, 0.0973)
6409 .. controls (-0.4311, 0.0987) and (-0.4386, 0.0989) .. (-0.4453, 0.0979)
6410 --cycle
6411 (-0.1163,-0.6145)
6412 -- (-0.0812,-0.6009)
6413 -- (-0.0509,-0.4868)
6414 -- (-0.0567,-0.4528)
6415 .. controls (-0.1227,-0.4845) and (-0.1350,-0.5483) .. (-0.1163,-0.6145)
6416 --cycle
6417 ( 0.9165, 0.0573)
6418 .. controls ( 0.8982, 0.0512) and ( 0.8800, 0.0260) .. ( 0.8880,-0.0013)
6419 .. controls ( 0.8973,-0.0334) and ( 0.9330,-0.0408) .. ( 0.9466,-0.0703)
6420 .. controls ( 0.9528,-0.0838) and ( 0.9514,-0.0964) .. ( 0.9506,-0.1091)
6421 -- ( 1.0000,-0.0243)
6422 .. controls ( 0.9816,-0.0179) and ( 0.9678,-0.0119) .. ( 0.9563, 0.0077)
6423 .. controls ( 0.9465, 0.0244) and ( 0.9476, 0.0488) .. ( 0.9340, 0.0564)
6424 .. controls ( 0.9288, 0.0593) and ( 0.9227, 0.0593) .. ( 0.9165, 0.0573)
6425 --cycle
6426 (-0.7064, 0.0069)
6427 .. controls (-0.7128, 0.0077) and (-0.7187, 0.0075) .. (-0.7237, 0.0061)
6428 .. controls (-0.7255, 0.0030) and (-0.7310, 0.0025) .. (-0.7316,-0.0115)
6429 .. controls (-0.7321,-0.0230) and (-0.7071,-0.1058) .. (-0.6984,-0.1096)
6430 .. controls (-0.6872,-0.1176) and (-0.6721,-0.1116) .. (-0.6609,-0.1096)
6431 .. controls (-0.6502,-0.1046) and (-0.6316,-0.0986) .. (-0.6242,-0.0900)
6432 .. controls (-0.5901,-0.0507) and (-0.6615, 0.0017) .. (-0.7064, 0.0069)
6433 --cycle
6434 (-1.0000, 0.0068)
6435 -- (-1.0000, 0.0020)
6436 -- (-0.9548,-0.0788)
6437 .. controls (-0.9170,-0.0310) and (-0.9342,-0.0158) .. (-1.0000, 0.0068)
6438 --cycle
6439 (-0.2643, 0.0054)
6440 .. controls (-0.2853,-0.0295) and (-0.2523,-0.0713) .. (-0.2182,-0.0843)
6441 .. controls (-0.2024,-0.0902) and (-0.1781,-0.0944) .. (-0.1687,-0.0757)
6442 .. controls (-0.1530,-0.0441) and (-0.2378, 0.0095) .. (-0.2643, 0.0054)
6443 --cycle
6444 ( 0.6299,-0.0102)
6445 .. controls ( 0.6155,-0.0145) and ( 0.6071,-0.0342) .. ( 0.6128,-0.0510)
6446 .. controls ( 0.6198,-0.0721) and ( 0.6440,-0.0790) .. ( 0.6606,-0.0986)
6447 .. controls ( 0.6738,-0.1143) and ( 0.6761,-0.1328) .. ( 0.6948,-0.1437)
6448 .. controls ( 0.7092,-0.1520) and ( 0.7311,-0.1484) .. ( 0.7401,-0.1664)
6449 .. controls ( 0.7461,-0.1784) and ( 0.7351,-0.2363) .. ( 0.7348,-0.2570)
6450 .. controls ( 0.7336,-0.3524) and ( 0.7289,-0.3324) .. ( 0.7620,-0.4187)

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6451 .. controls ( 0.7631,-0.4216) and ( 0.7642,-0.4246) .. ( 0.7652,-0.4275)
6452 -- ( 0.8003,-0.3672)
6453 .. controls ( 0.7976,-0.3636) and ( 0.7942,-0.3606) .. ( 0.7918,-0.3568)
6454 .. controls ( 0.7778,-0.3349) and ( 0.7645,-0.2537) .. ( 0.7970,-0.2417)
6455 .. controls ( 0.8206,-0.2330) and ( 0.8347,-0.2671) .. ( 0.8432,-0.2822)
6456 -- ( 0.8469,-0.2872)
6457 -- ( 0.8787,-0.2326)
6458 -- ( 0.8594,-0.1993)
6459 .. controls ( 0.8496,-0.1847) and ( 0.7996,-0.1314) .. ( 0.7847,-0.1281)
6460 .. controls ( 0.7712,-0.1229) and ( 0.7642,-0.1268) .. ( 0.7518,-0.1281)
6461 .. controls ( 0.7451,-0.1148) and ( 0.7397,-0.1014) .. ( 0.7293,-0.0886)
6462 -- ( 0.6461,-0.0117)
6463 .. controls ( 0.6402,-0.0090) and ( 0.6347,-0.0087) .. ( 0.6299,-0.0102)
6464 --cycle
6465 (-0.5178,-0.0844)
6466 .. controls (-0.5451,-0.0820) and (-0.5852,-0.0947) .. (-0.5902,-0.1144)
6467 .. controls (-0.6007,-0.1557) and (-0.5621,-0.1731) .. (-0.5414,-0.1997)
6468 .. controls (-0.5274,-0.2177) and (-0.5229,-0.2355) .. (-0.5044,-0.2525)
6469 .. controls (-0.4888,-0.2669) and (-0.4706,-0.2705) .. (-0.4543,-0.2923)
6470 .. controls (-0.4420,-0.3087) and (-0.4220,-0.3707) .. (-0.4141,-0.3932)
6471 .. controls (-0.3620,-0.3875) and (-0.3060,-0.4031) .. (-0.3060,-0.3592)
6472 .. controls (-0.3060,-0.3272) and (-0.3358,-0.3272) .. (-0.3716,-0.3008)
6473 .. controls (-0.4367,-0.2529) and (-0.4253,-0.2451) .. (-0.4621,-0.1914)
6474 .. controls (-0.4700,-0.1800) and (-0.4814,-0.1685) .. (-0.4867,-0.1556)
6475 .. controls (-0.4970,-0.1308) and (-0.4804,-0.1088) .. (-0.4966,-0.0923)
6476 .. controls (-0.5011,-0.0877) and (-0.5087,-0.0853) .. (-0.5178,-0.0844)
6477 --cycle
6478 (-0.4165,-0.0846)
6479 .. controls (-0.4357,-0.0807) and (-0.4622,-0.1075) .. (-0.4395,-0.1440)
6480 .. controls (-0.4316,-0.1566) and (-0.4254,-0.1571) .. (-0.4141,-0.1634)
6481 .. controls (-0.4094,-0.1522) and (-0.4042,-0.1415) .. (-0.4019,-0.1294)
6482 .. controls (-0.3960,-0.1004) and (-0.4049,-0.0870) .. (-0.4165,-0.0846)
6483 --cycle
6484 (-0.9358,-0.1125)
6485 -- (-0.8813,-0.2098)
6486 .. controls (-0.8768,-0.1903) and (-0.8656,-0.1673) .. (-0.8723,-0.1485)
6487 .. controls (-0.8801,-0.1269) and (-0.9022,-0.1274) .. (-0.9358,-0.1125)
6488 --cycle
6489 ( 0.1455,-0.1458)
6490 .. controls ( 0.1402,-0.1449) and ( 0.1336,-0.1452) .. ( 0.1255,-0.1471)
6491 .. controls ( 0.0901,-0.1850) and ( 0.1064,-0.2454) .. ( 0.1360,-0.2301)
6492 .. controls ( 0.1569,-0.2194) and ( 0.1827,-0.1522) .. ( 0.1455,-0.1458)
6493 --cycle
6494 (-0.1477,-0.1474)
6495 .. controls (-0.1646,-0.1458) and (-0.1813,-0.1543) .. (-0.1847,-0.1659)
6496 .. controls (-0.1889,-0.1806) and (-0.1612,-0.2953) .. (-0.1163,-0.2315)
6497 -- (-0.0420,-0.4418)
6498 .. controls (-0.0291,-0.4661) and (-0.0068,-0.4600) .. ( 0.0136,-0.4880)
6499 .. controls ( 0.0294,-0.5097) and ( 0.0259,-0.5331) .. ( 0.0419,-0.5487)
6500 .. controls ( 0.0694,-0.5755) and ( 0.1462,-0.5710) .. ( 0.1798,-0.6001)
6501 -- ( 0.2188,-0.6436)
6502 .. controls ( 0.2392,-0.6605) and ( 0.2566,-0.6577) .. ( 0.2804,-0.6838)
6503 .. controls ( 0.3122,-0.7186) and ( 0.3037,-0.7586) .. ( 0.3603,-0.7592)

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6504 .. controls ( 0.3537,-0.7217) and ( 0.3358,-0.6781) .. ( 0.3603,-0.6427)
6505 .. controls ( 0.3743,-0.6222) and ( 0.3978,-0.6232) .. ( 0.4032,-0.6039)
6506 .. controls ( 0.4084,-0.5852) and ( 0.3901,-0.5654) .. ( 0.3712,-0.5741)
6507 .. controls ( 0.3573,-0.5804) and ( 0.3558,-0.5936) .. ( 0.3518,-0.6044)
6508 .. controls ( 0.3319,-0.6046) and ( 0.2996,-0.6092) .. ( 0.2842,-0.6044)
6509 .. controls ( 0.2568,-0.5917) and ( 0.2515,-0.5648) .. ( 0.2231,-0.5501)
6510 .. controls ( 0.1960,-0.5359) and ( 0.1632,-0.5421) .. ( 0.1413,-0.5292)
6511 -- ( 0.0626,-0.4601)
6512 .. controls ( 0.0525,-0.4430) and ( 0.0547,-0.4207) .. ( 0.0440,-0.4065)
6513 .. controls ( 0.0320,-0.3906) and ( 0.0076,-0.3898) .. (-0.0104,-0.3714)
6514 .. controls (-0.0515,-0.3289) and ( 0.0146,-0.2721) .. (-0.0737,-0.2358)
6515 .. controls (-0.0903,-0.2290) and (-0.0917,-0.2313) .. (-0.1098,-0.2315)
6516 -- (-0.1098,-0.1892)
6517 .. controls (-0.1137,-0.1607) and (-0.1308,-0.1491) .. (-0.1477,-0.1474)
6518 --cycle
6519 (-0.7679,-0.1481)
6520 .. controls (-0.8119,-0.1523) and (-0.8157,-0.2051) .. (-0.8303,-0.2401)
6521 -- (-0.8453,-0.2740)
6522 -- (-0.8299,-0.3015)
6523 .. controls (-0.7861,-0.2968) and (-0.8116,-0.2403) .. (-0.7732,-0.2278)
6524 .. controls (-0.7561,-0.2223) and (-0.7349,-0.2415) .. (-0.7204,-0.2497)
6525 .. controls (-0.6711,-0.2774) and (-0.6473,-0.2864) .. (-0.6524,-0.3506)
6526 -- (-0.6787,-0.3422)
6527 .. controls (-0.6786,-0.3475) and (-0.6826,-0.3544) .. (-0.6787,-0.3655)
6528 .. controls (-0.6635,-0.4244) and (-0.5943,-0.3658) .. (-0.5763,-0.3760)
6529 .. controls (-0.5586,-0.3861) and (-0.5497,-0.4251) .. (-0.5357,-0.4418)
6530 .. controls (-0.5118,-0.4701) and (-0.4694,-0.4662) .. (-0.4504,-0.5047)
6531 .. controls (-0.4231,-0.5599) and (-0.4535,-0.6772) .. (-0.4451,-0.7421)
6532 .. controls (-0.4389,-0.7901) and (-0.4023,-0.8005) .. (-0.3912,-0.8443)
6533 .. controls (-0.3883,-0.8558) and (-0.3874,-0.8667) .. (-0.3869,-0.8774)
6534 -- (-0.3386,-0.8778)
6535 .. controls (-0.3371,-0.8645) and (-0.3342,-0.8523) .. (-0.3394,-0.8358)
6536 .. controls (-0.3448,-0.8167) and (-0.3914,-0.7567) .. (-0.3962,-0.6996)
6537 .. controls (-0.4039,-0.6074) and (-0.3294,-0.5871) .. (-0.3545,-0.4954)
6538 -- (-0.3886,-0.5039)
6539 -- (-0.4196,-0.4442)
6540 -- (-0.4864,-0.4090)
6541 -- (-0.5345,-0.3241)
6542 -- (-0.6106,-0.2802)
6543 -- (-0.6106,-0.1975)
6544 .. controls (-0.6301,-0.2027) and (-0.6486,-0.2101) .. (-0.6694,-0.2022)
6545 .. controls (-0.7004,-0.1904) and (-0.7133,-0.1559) .. (-0.7464,-0.1495)
6546 .. controls (-0.7544,-0.1479) and (-0.7616,-0.1475) .. (-0.7679,-0.1481)
6547 --cycle
6548 ( 0.0029,-0.2060)
6549 .. controls (-0.0139,-0.2731) and ( 0.0196,-0.2608) .. ( 0.0476,-0.3014)
6550 .. controls ( 0.0682,-0.3314) and ( 0.0511,-0.3569) .. ( 0.0750,-0.3784)
6551 .. controls ( 0.0974,-0.3988) and ( 0.1304,-0.3876) .. ( 0.1549,-0.4019)
6552 .. controls ( 0.1795,-0.4164) and ( 0.1878,-0.4529) .. ( 0.1987,-0.4783)
6553 .. controls ( 0.2461,-0.4539) and ( 0.2519,-0.4021) .. ( 0.2180,-0.3618)
6554 .. controls ( 0.1964,-0.3362) and ( 0.1652,-0.3426) .. ( 0.1414,-0.3257)
6555 .. controls ( 0.1198,-0.3103) and ( 0.1183,-0.2881) .. ( 0.1007,-0.2689)
6556 .. controls ( 0.0838,-0.2504) and ( 0.0265,-0.2166) .. ( 0.0029,-0.2060)

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6557 --cycle
6558 ( 0.2327,-0.2826)
6559 .. controls ( 0.1961,-0.2955) and ( 0.1961,-0.3123) .. ( 0.2327,-0.3251)
6560 --cycle
6561 (-0.7548,-0.3137)
6562 .. controls (-0.7774,-0.3164) and (-0.7890,-0.3323) .. (-0.7986,-0.3573)
6563 -- (-0.7759,-0.3979)
6564 .. controls (-0.7735,-0.3968) and (-0.7711,-0.3964) .. (-0.7688,-0.3946)
6565 -- (-0.7205,-0.3166)
6566 .. controls (-0.7341,-0.3135) and (-0.7454,-0.3126) .. (-0.7548,-0.3137)
6567 --cycle
6568 ( 0.4114,-0.3847)
6569 .. controls ( 0.4216,-0.4136) and ( 0.4238,-0.4142) .. ( 0.4540,-0.4102)
6570 -- ( 0.4540,-0.3932)
6571 --cycle
6572 ( 0.5395,-0.3997)
6573 .. controls ( 0.5263,-0.3990) and ( 0.5044,-0.4032) .. ( 0.4625,-0.4018)
6574 -- ( 0.4780,-0.4954)
6575 .. controls ( 0.4757,-0.5287) and ( 0.4518,-0.5542) .. ( 0.4648,-0.5776)
6576 .. controls ( 0.4852,-0.6142) and ( 0.5202,-0.5603) .. ( 0.5614,-0.5929)
6577 .. controls ( 0.5752,-0.6038) and ( 0.6063,-0.6359) .. ( 0.6275,-0.6638)
6578 -- ( 0.6570,-0.6132)
6579 .. controls ( 0.6460,-0.6042) and ( 0.6347,-0.5954) .. ( 0.6268,-0.5865)
6580 -- ( 0.5937,-0.5346)
6581 .. controls ( 0.5648,-0.5023) and ( 0.5031,-0.4880) .. ( 0.5646,-0.4273)
6582 .. controls ( 0.5574,-0.4062) and ( 0.5528,-0.4005) .. ( 0.5395,-0.3997)
6583 --cycle
6584 (-0.6609,-0.4273)
6585 .. controls (-0.7027,-0.4247) and (-0.7300,-0.4414) .. (-0.7397,-0.4624)
6586 -- (-0.7047,-0.5249)
6587 .. controls (-0.7013,-0.5263) and (-0.6989,-0.5282) .. (-0.6950,-0.5294)
6588 .. controls (-0.6935,-0.4878) and (-0.6933,-0.4806) .. (-0.6609,-0.4528)
6589 --cycle
6590 (-0.5689,-0.4528)
6591 .. controls (-0.6368,-0.4677) and (-0.6352,-0.5020) .. (-0.6354,-0.5634)
6592 -- (-0.5757,-0.6071)
6593 -- (-0.5162,-0.6826)
6594 .. controls (-0.5073,-0.6508) and (-0.5037,-0.6125) .. (-0.5241,-0.5838)
6595 .. controls (-0.5384,-0.5639) and (-0.5622,-0.5584) .. (-0.5689,-0.5361)
6596 .. controls (-0.5775,-0.5167) and (-0.5648,-0.4918) .. (-0.5689,-0.4528)
6597 --cycle
6598 (-0.6354,-0.5634)
6599 .. controls (-0.6583,-0.5576) and (-0.6713,-0.5579) .. (-0.6839,-0.5619)
6600 -- (-0.6487,-0.6248)
6601 .. controls (-0.6395,-0.6053) and (-0.6326,-0.5852) .. (-0.6354,-0.5634)
6602 --cycle
6603 (-0.0056,-0.5890)
6604 .. controls (-0.0554,-0.6155) and (-0.0426,-0.6370) .. (-0.0606,-0.6818)
6605 -- (-0.1199,-0.7847)
6606 .. controls (-0.1298,-0.8015) and (-0.1531,-0.8317) .. (-0.1499,-0.8510)
6607 .. controls (-0.1482,-0.8615) and (-0.1397,-0.8702) .. (-0.1295,-0.8795)
6608 -- (-0.0507,-0.8802)
6609 .. controls (-0.0629,-0.8583) and (-0.0745,-0.8380) .. (-0.0742,-0.8358)

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6610 .. controls (-0.0792,-0.8239) and (-0.0776,-0.8135) .. (-0.0742,-0.8027)
6611 .. controls (-0.0460,-0.7520) and ( 0.0016,-0.7834) .. ( 0.0277,-0.7780)
6612 .. controls ( 0.0760,-0.7679) and ( 0.1284,-0.6914) .. ( 0.1207,-0.6405)
6613 .. controls ( 0.1150,-0.6017) and ( 0.0841,-0.6082) .. ( 0.0711,-0.6267)
6614 .. controls ( 0.0620,-0.6397) and ( 0.0556,-0.7141) .. ( 0.0539,-0.7336)
6615 .. controls (-0.0413,-0.7085) and ( 0.0139,-0.6637) .. (-0.0056,-0.5890)
6616 --cycle
6617 ( 0.4284,-0.6571)
6618 .. controls ( 0.4285,-0.7307) and ( 0.4284,-0.7652) .. ( 0.5135,-0.7336)
6619 .. controls ( 0.5170,-0.7469) and ( 0.5220,-0.7585) .. ( 0.5179,-0.7726)
6620 .. controls ( 0.5091,-0.8019) and ( 0.4473,-0.8546) .. ( 0.4851,-0.8847)
6621 -- ( 0.4987,-0.8848)
6622 -- ( 0.5768,-0.7509)
6623 .. controls ( 0.5767,-0.7509) and ( 0.5767,-0.7507) .. ( 0.5767,-0.7507)
6624 .. controls ( 0.5412,-0.6652) and ( 0.5083,-0.6726) .. ( 0.4284,-0.6571)
6625 --cycle
6626 (-0.2914,-0.6672)
6627 .. controls (-0.2998,-0.6666) and (-0.3106,-0.6686) .. (-0.3250,-0.6743)
6628 .. controls (-0.3545,-0.7128) and (-0.3081,-0.7358) .. (-0.2850,-0.7678)
6629 .. controls (-0.2710,-0.7873) and (-0.2601,-0.8137) .. (-0.2351,-0.8216)
6630 .. controls (-0.2083,-0.8301) and (-0.1916,-0.8105) .. (-0.1960,-0.7845)
6631 .. controls (-0.2008,-0.7566) and (-0.2232,-0.7418) .. (-0.2396,-0.7216)
6632 .. controls (-0.2612,-0.6950) and (-0.2660,-0.6690) .. (-0.2914,-0.6672)
6633 --cycle
6634 (-0.5641,-0.6998)
6635 .. controls (-0.5850,-0.6984) and (-0.5808,-0.7367) .. (-0.5766,-0.7507)
6636 .. controls (-0.5748,-0.7566) and (-0.5723,-0.7598) .. (-0.5702,-0.7648)
6637 -- (-0.5492,-0.8022)
6638 .. controls (-0.5310,-0.8247) and (-0.5120,-0.8367) .. (-0.5052,-0.8613)
6639 .. controls (-0.5044,-0.8642) and (-0.5062,-0.8717) .. (-0.5063,-0.8763)
6640 -- (-0.4585,-0.8767)
6641 .. controls (-0.4596,-0.7984) and (-0.5013,-0.7963) .. (-0.5234,-0.7583)
6642 .. controls (-0.5344,-0.7394) and (-0.5352,-0.7120) .. (-0.5535,-0.7030)
6643 .. controls (-0.5576,-0.7010) and (-0.5611,-0.7000) .. (-0.5641,-0.6998)
6644 --cycle
6645 ( 0.1990,-0.7341)
6646 .. controls ( 0.1094,-0.7768) and ( 0.2330,-0.8330) .. ( 0.2586,-0.8828)
6647 -- ( 0.3183,-0.8833)
6648 .. controls ( 0.3165,-0.8684) and ( 0.3066,-0.8565) .. ( 0.2991,-0.8428)
6649 .. controls ( 0.2762,-0.8010) and ( 0.2508,-0.7418) .. ( 0.1990,-0.7341)
6650 --cycle
6651 ( 0.3603,-0.7592)
6652 -- ( 0.3859,-0.8188)
6653 .. controls ( 0.4178,-0.7853) and ( 0.4108,-0.7527) .. ( 0.3603,-0.7592)
6654 --cycle
6655 ( 0.4369,-0.8443)
6656 .. controls ( 0.4147,-0.8480) and ( 0.3837,-0.8661) .. ( 0.3628,-0.8837)
6657 -- ( 0.4240,-0.8842)
6658 .. controls ( 0.4307,-0.8690) and ( 0.4358,-0.8541) .. ( 0.4369,-0.8443)
6659 --cycle
6660 (-0.3205,-0.8528)
6661 -- (-0.3266,-0.8779)
6662 -- (-0.2773,-0.8783)

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6663 .. controls (-0.2800,-0.8719) and (-0.2850,-0.8655) .. (-0.2963,-0.8600)
6664 --cycle
6665 ( 0.1093,-0.8568)
6666 .. controls ( 0.0964,-0.8568) and ( 0.0834,-0.8587) .. ( 0.0710,-0.8600)
6667 .. controls ( 0.0605,-0.8611) and ( 0.0403,-0.8617) .. ( 0.0312,-0.8664)
6668 .. controls ( 0.0240,-0.8701) and ( 0.0203,-0.8751) .. ( 0.0184,-0.8808)
6669 -- ( 0.1002,-0.8815)
6670 -- ( 0.1050,-0.8698)
6671 -- ( 0.1085,-0.8815)
6672 -- ( 0.1641,-0.8820)
6673 .. controls ( 0.1606,-0.8757) and ( 0.1553,-0.8698) .. ( 0.1463,-0.8649)
6674 .. controls ( 0.1347,-0.8586) and ( 0.1221,-0.8568) .. ( 0.1093,-0.8568)
6675 --cycle
6676 ;
6677 }
6678 }
6679 \fi

```

```

hex/terrain/town/road
hex/terrain/town/small road
hex/terrain/town/house

```

For villages, towns, and cities, we need three styles: one for houses, and separate styles for regular and small roads. Note that we draw using the stroke colour for roads and houses.



```

6680 \ifhex@terrain@pic
6681 \tikzset{
6682   hex/terrain/town/road/.style={
6683     fill=none,
6684     draw=gray!50!black,
6685     scale line widths,
6686     line width=.3mm
6687   },
6688   hex/terrain/town/small road/.style={
6689     fill=none,
6690     draw=gray!75!black,
6691     scale line widths,
6692     line width=.15mm
6693   },
6694   hex/terrain/town/post road/.style={
6695     fill=none
6696   },
6697   hex/terrain/town/house/.style={
6698     draw=none,
6699     fill=gray!75!black,
6700   }
6701 }

```

hex/terrain/village

Now for village, town, and city patterns.

```
6702 \tikzset{
6703   hex/terrain/village/.pic={
6704     \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
6705       ( 0.0073, 0.8700)
6706     -- ( 0.3952, 0.3373)
6707     -- ( 0.3884, 0.2029)
6708     -- ( 0.3555, 0.1378)
6709     -- ( 0.3751, 0.0880)
6710     -- ( 0.2513,-0.1997)
6711     -- ( 0.1396,-0.4505)
6712     -- ( 0.0641,-0.6512)
6713     -- ( 0.0070,-0.8700)
6714     -- ( 0.0070,-0.8700)
6715     ;
6716     \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
6717       ( 0.7575, 0.4367)
6718     -- ( 0.3945, 0.3375)
6719     -- ( 0.3945, 0.3375)
6720     ;
6721     \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
6722       (-0.1900,-0.0806)
6723     -- (-0.1155, 0.1588)
6724     ;
6725     \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
6726       (-0.1308, 0.1580)
6727     -- (-0.7603, 0.4394)
6728     ;
6729     \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
6730       (-0.6615,-0.2309)
6731     -- (-0.6777,-0.3255)
6732     -- (-0.7607,-0.4327)
6733     ;
6734     \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
6735       (-0.6676,-0.2405)
6736     -- (-0.4599,-0.1067)
6737     -- (-0.1877,-0.0679)
6738     ;
6739     \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
6740       ( 0.2082,-0.3003)
6741     -- ( 0.4578,-0.4855)
6742     -- ( 0.5914,-0.3675)
6743     -- ( 0.7607,-0.4420)
6744     ;
6745     \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
6746       ( 0.3827, 0.1864)
6747     -- (-0.1290, 0.1576)
6748     ;
6749     \path[hex/terrain/town/house,pic actions]
```

```

6750 ( 0.2259, 0.4898)
6751 -- ( 0.2453, 0.4680)
6752 -- ( 0.2052, 0.4324)
6753 -- ( 0.1858, 0.4542)
6754 --cycle
6755 ;
6756 \path[hex/terrain/town/house,pic actions]
6757 ( 0.2259, 0.4898)
6758 -- ( 0.2453, 0.4680)
6759 -- ( 0.2052, 0.4324)
6760 -- ( 0.1858, 0.4542)
6761 --cycle
6762 ;
6763 \path[hex/terrain/town/house,pic actions]
6764 (-0.1978, 0.1663)
6765 -- (-0.1534, 0.1549)
6766 -- (-0.1685, 0.0960)
6767 -- (-0.2130, 0.1074)
6768 --cycle
6769 ;
6770 \path[hex/terrain/town/house,pic actions]
6771 (-0.1978, 0.1663)
6772 -- (-0.1534, 0.1549)
6773 -- (-0.1685, 0.0960)
6774 -- (-0.2130, 0.1074)
6775 --cycle
6776 ;
6777 \path[hex/terrain/town/house,pic actions]
6778 ( 0.5127,-0.3559)
6779 -- ( 0.5341,-0.3759)
6780 -- ( 0.4975,-0.4151)
6781 -- ( 0.4761,-0.3951)
6782 --cycle
6783 ;
6784 \path[hex/terrain/town/house,pic actions]
6785 ( 0.5127,-0.3559)
6786 -- ( 0.5341,-0.3759)
6787 -- ( 0.4975,-0.4151)
6788 -- ( 0.4761,-0.3951)
6789 --cycle
6790 ;
6791 \path[hex/terrain/town/house,pic actions]
6792 ( 0.2761, 0.3992)
6793 -- ( 0.2947, 0.3765)
6794 -- ( 0.2533, 0.3425)
6795 -- ( 0.2347, 0.3651)
6796 --cycle
6797 ;
6798 \path[hex/terrain/town/house,pic actions]
6799 ( 0.2761, 0.3992)
6800 -- ( 0.2947, 0.3765)
6801 -- ( 0.2533, 0.3425)
6802 -- ( 0.2347, 0.3651)

```

```

6803 --cycle
6804 ;
6805 \path[hex/terrain/town/house,pic actions]
6806 ( 0.3227, 0.3548)
6807 -- ( 0.3421, 0.3329)
6808 -- ( 0.3020, 0.2974)
6809 -- ( 0.2826, 0.3192)
6810 --cycle
6811 ;
6812 \path[hex/terrain/town/house,pic actions]
6813 ( 0.3227, 0.3548)
6814 -- ( 0.3421, 0.3329)
6815 -- ( 0.3020, 0.2974)
6816 -- ( 0.2826, 0.3192)
6817 --cycle
6818 ;
6819 \path[hex/terrain/town/house,pic actions]
6820 ( 0.2901, 0.6234)
6821 -- ( 0.3088, 0.6008)
6822 -- ( 0.2674, 0.5667)
6823 -- ( 0.2487, 0.5893)
6824 --cycle
6825 ;
6826 \path[hex/terrain/town/house,pic actions]
6827 ( 0.2901, 0.6234)
6828 -- ( 0.3088, 0.6008)
6829 -- ( 0.2674, 0.5667)
6830 -- ( 0.2487, 0.5893)
6831 --cycle
6832 ;
6833 \path[hex/terrain/town/house,pic actions]
6834 (-0.3456, 0.2854)
6835 -- (-0.3335, 0.3120)
6836 -- (-0.2847, 0.2898)
6837 -- (-0.2968, 0.2632)
6838 --cycle
6839 ;
6840 \path[hex/terrain/town/house,pic actions]
6841 (-0.3456, 0.2854)
6842 -- (-0.3335, 0.3120)
6843 -- (-0.2847, 0.2898)
6844 -- (-0.2968, 0.2632)
6845 --cycle
6846 ;
6847 \path[hex/terrain/town/house,pic actions]
6848 (-0.6678,-0.1369)
6849 -- (-0.6492,-0.1143)
6850 -- (-0.6078,-0.1484)
6851 -- (-0.6264,-0.1710)
6852 --cycle
6853 ;
6854 \path[hex/terrain/town/house,pic actions]
6855 (-0.6678,-0.1369)

```

```

6856 -- (-0.6492,-0.1143)
6857 -- (-0.6078,-0.1484)
6858 -- (-0.6264,-0.1710)
6859 --cycle
6860 ;
6861 \path[hex/terrain/town/house,pic actions]
6862 ( 0.4610, 0.0967)
6863 -- ( 0.4896, 0.0909)
6864 -- ( 0.4790, 0.0384)
6865 -- ( 0.4503, 0.0442)
6866 --cycle
6867 ;
6868 \path[hex/terrain/town/house,pic actions]
6869 ( 0.4610, 0.0967)
6870 -- ( 0.4896, 0.0909)
6871 -- ( 0.4790, 0.0384)
6872 -- ( 0.4503, 0.0442)
6873 --cycle
6874 ;
6875 \path[hex/terrain/town/house,pic actions]
6876 ( 0.2924,-0.1375)
6877 -- ( 0.3110,-0.0955)
6878 -- ( 0.3667,-0.1202)
6879 -- ( 0.3481,-0.1621)
6880 --cycle
6881 ;
6882 \path[hex/terrain/town/house,pic actions]
6883 ( 0.2924,-0.1375)
6884 -- ( 0.3110,-0.0955)
6885 -- ( 0.3667,-0.1202)
6886 -- ( 0.3481,-0.1621)
6887 --cycle
6888 ;
6889 \path[hex/terrain/town/house,pic actions]
6890 ( 0.5094, 0.3292)
6891 -- ( 0.5505, 0.3494)
6892 -- ( 0.5773, 0.2947)
6893 -- ( 0.5362, 0.2746)
6894 --cycle
6895 ;
6896 \path[hex/terrain/town/house,pic actions]
6897 ( 0.5094, 0.3292)
6898 -- ( 0.5505, 0.3494)
6899 -- ( 0.5773, 0.2947)
6900 -- ( 0.5362, 0.2746)
6901 --cycle
6902 ;
6903 \path[hex/terrain/town/house,pic actions]
6904 (-0.1323, 0.2640)
6905 -- (-0.0890, 0.2489)
6906 -- (-0.1092, 0.1914)
6907 -- (-0.1524, 0.2065)
6908 --cycle

```

```

6909 ;
6910 \path[hex/terrain/town/house,pic actions]
6911 (-0.1323, 0.2640)
6912 -- (-0.0890, 0.2489)
6913 -- (-0.1092, 0.1914)
6914 -- (-0.1524, 0.2065)
6915 --cycle
6916 ;
6917 \path[hex/terrain/town/house,pic actions]
6918 ( 0.4115,-0.5373)
6919 -- ( 0.4390,-0.5006)
6920 -- ( 0.4877,-0.5372)
6921 -- ( 0.4601,-0.5739)
6922 --cycle
6923 ;
6924 \path[hex/terrain/town/house,pic actions]
6925 ( 0.4115,-0.5373)
6926 -- ( 0.4390,-0.5006)
6927 -- ( 0.4877,-0.5372)
6928 -- ( 0.4601,-0.5739)
6929 --cycle
6930 ;
6931 \path[hex/terrain/town/house,pic actions]
6932 ( 0.3095, 0.1272)
6933 -- ( 0.3519, 0.1095)
6934 -- ( 0.3284, 0.0533)
6935 -- ( 0.2861, 0.0710)
6936 --cycle
6937 ;
6938 \path[hex/terrain/town/house,pic actions]
6939 ( 0.3095, 0.1272)
6940 -- ( 0.3519, 0.1095)
6941 -- ( 0.3284, 0.0533)
6942 -- ( 0.2861, 0.0710)
6943 --cycle
6944 ;
6945 \path[hex/terrain/town/house,pic actions]
6946 ( 0.2904, 0.2714)
6947 -- ( 0.3361, 0.2681)
6948 -- ( 0.3318, 0.2074)
6949 -- ( 0.2861, 0.2106)
6950 --cycle
6951 ;
6952 \path[hex/terrain/town/house,pic actions]
6953 ( 0.2904, 0.2714)
6954 -- ( 0.3361, 0.2681)
6955 -- ( 0.3318, 0.2074)
6956 -- ( 0.2861, 0.2106)
6957 --cycle
6958 ;
6959 \path[hex/terrain/town/house,pic actions]
6960 ( 0.4665, 0.4396)
6961 -- ( 0.4868, 0.3985)

```

```

6962 -- ( 0.4321, 0.3716)
6963 -- ( 0.4119, 0.4127)
6964 --cycle
6965 ;
6966 \path[hex/terrain/town/house,pic actions]
6967 ( 0.4665, 0.4396)
6968 -- ( 0.4868, 0.3985)
6969 -- ( 0.4321, 0.3716)
6970 -- ( 0.4119, 0.4127)
6971 --cycle
6972 ;
6973 \path[hex/terrain/town/house,pic actions]
6974 ( 0.4187, 0.2523)
6975 -- ( 0.4643, 0.2574)
6976 -- ( 0.4711, 0.1969)
6977 -- ( 0.4256, 0.1917)
6978 --cycle
6979 ;
6980 \path[hex/terrain/town/house,pic actions]
6981 ( 0.4187, 0.2523)
6982 -- ( 0.4643, 0.2574)
6983 -- ( 0.4711, 0.1969)
6984 -- ( 0.4256, 0.1917)
6985 --cycle
6986 ;
6987 \path[hex/terrain/town/house,pic actions]
6988 ( 0.3746, 0.1600)
6989 -- ( 0.4021, 0.1699)
6990 -- ( 0.4204, 0.1195)
6991 -- ( 0.3929, 0.1095)
6992 --cycle
6993 ;
6994 \path[hex/terrain/town/house,pic actions]
6995 ( 0.3746, 0.1600)
6996 -- ( 0.4021, 0.1699)
6997 -- ( 0.4204, 0.1195)
6998 -- ( 0.3929, 0.1095)
6999 --cycle
7000 ;
7001 }
7002 }
7003 \fi

```

hex/terrain/town

A town.



```

7004 \ifhex@terrain@pic
7005 \tikzset{
7006   hex/terrain/town/.pic={
7007     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
7008       ( 0.1432,-0.4518)
7009       -- (-0.0320,-0.2906)
7010       -- ( 0.0745,-0.0351)
7011       -- ( 0.1130,-0.0387)
7012       ;
7013     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
7014       ( 0.0729,-0.0352)
7015       -- (-0.1716, 0.0254)
7016       ;
7017     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
7018       (-0.2493, 0.5648)
7019       -- (-0.2192, 0.4501)
7020       ;
7021     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
7022       ( 0.0677,-0.6538)
7023       -- ( 0.1754,-0.7052)
7024       -- ( 0.4358,-0.4688)
7025       ;
7026     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
7027       ( 0.0439,-0.3617)
7028       -- (-0.0921,-0.5012)
7029       -- (-0.2865,-0.3243)
7030       -- (-0.4420,-0.4608)
7031       -- (-0.5795,-0.4446)
7032       -- (-0.6421,-0.3520)
7033       ;
7034     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
7035       ( 0.0622,-0.6515)
7036       -- (-0.0316,-0.6176)
7037       -- (-0.0221,-0.5364)
7038       ;
7039     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
7040       ( 0.0048,-0.2069)
7041       -- (-0.1945,-0.1818)
7042       -- (-0.2278,-0.2247)
7043       -- (-0.5051,-0.1356)
7044       ;
7045     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
7046       (-0.3383, 0.0449)
7047       -- (-0.2189, 0.4510)
7048       ;
7049     \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
7050       ( 0.0073, 0.8700)
7051       -- ( 0.3952, 0.3373)
7052       -- ( 0.3884, 0.2029)
7053       -- ( 0.3555, 0.1378)
7054       -- ( 0.3751, 0.0880)
7055       -- ( 0.2513,-0.1997)
7056       -- ( 0.1396,-0.4505)

```

```

7057 -- ( 0.0641,-0.6512)
7058 -- ( 0.0070,-0.8700)
7059 -- ( 0.0070,-0.8700)
7060 ;
7061 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
7062 ( 0.7575, 0.4367)
7063 -- ( 0.3945, 0.3375)
7064 -- ( 0.3945, 0.3375)
7065 ;
7066 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
7067 (-0.1900,-0.0806)
7068 -- (-0.0751, 0.3938)
7069 -- (-0.0765, 0.3925)
7070 ;
7071 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
7072 (-0.1308, 0.1580)
7073 -- (-0.7603, 0.4394)
7074 ;
7075 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
7076 (-0.7139,-0.1526)
7077 -- (-0.6147,-0.3362)
7078 -- (-0.7607,-0.4327)
7079 ;
7080 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
7081 (-0.6676,-0.2405)
7082 -- (-0.4599,-0.1067)
7083 -- (-0.1877,-0.0679)
7084 ;
7085 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
7086 ( 0.2082,-0.3003)
7087 -- ( 0.4578,-0.4855)
7088 -- ( 0.5914,-0.3675)
7089 -- ( 0.7607,-0.4420)
7090 ;
7091 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
7092 ( 0.3827, 0.1864)
7093 -- (-0.1290, 0.1576)
7094 ;
7095 \path[hex/terrain/town/house,pic actions]
7096 (-0.4493,-0.3075)
7097 -- (-0.4043,-0.2868)
7098 -- (-0.3710,-0.3593)
7099 -- (-0.4160,-0.3799)
7100 --cycle
7101 ;
7102 \path[hex/terrain/town/house,pic actions]
7103 (-0.4493,-0.3075)
7104 -- (-0.4043,-0.2868)
7105 -- (-0.3710,-0.3593)
7106 -- (-0.4160,-0.3799)
7107 --cycle
7108 ;
7109 \path[hex/terrain/town/house,pic actions]

```

```

7110 (-0.5264,-0.1066)
7111 -- (-0.5514,-0.0681)
7112 -- (-0.5002,-0.0349)
7113 -- (-0.4753,-0.0733)
7114 --cycle
7115 ;
7116 \path[hex/terrain/town/house,pic actions]
7117 (-0.5264,-0.1066)
7118 -- (-0.5514,-0.0681)
7119 -- (-0.5002,-0.0349)
7120 -- (-0.4753,-0.0733)
7121 --cycle
7122 ;
7123 \path[hex/terrain/town/house,pic actions]
7124 (-0.1978, 0.1663)
7125 -- (-0.1534, 0.1549)
7126 -- (-0.1685, 0.0960)
7127 -- (-0.2130, 0.1074)
7128 --cycle
7129 ;
7130 \path[hex/terrain/town/house,pic actions]
7131 (-0.1978, 0.1663)
7132 -- (-0.1534, 0.1549)
7133 -- (-0.1685, 0.0960)
7134 -- (-0.2130, 0.1074)
7135 --cycle
7136 ;
7137 \path[hex/terrain/town/house,pic actions]
7138 ( 0.2259, 0.4898)
7139 -- ( 0.2453, 0.4680)
7140 -- ( 0.2052, 0.4324)
7141 -- ( 0.1858, 0.4542)
7142 --cycle
7143 ;
7144 \path[hex/terrain/town/house,pic actions]
7145 ( 0.2259, 0.4898)
7146 -- ( 0.2453, 0.4680)
7147 -- ( 0.2052, 0.4324)
7148 -- ( 0.1858, 0.4542)
7149 --cycle
7150 ;
7151 \path[hex/terrain/town/house,pic actions]
7152 (-0.0986, 0.2553)
7153 -- (-0.0882, 0.2827)
7154 -- (-0.0380, 0.2637)
7155 -- (-0.0484, 0.2363)
7156 --cycle
7157 ;
7158 \path[hex/terrain/town/house,pic actions]
7159 (-0.0986, 0.2553)
7160 -- (-0.0882, 0.2827)
7161 -- (-0.0380, 0.2637)
7162 -- (-0.0484, 0.2363)

```

```

7163 --cycle
7164 ;
7165 \path[hex/terrain/town/house,pic actions]
7166 ( 0.0834, 0.2379)
7167 -- ( 0.0888, 0.2667)
7168 -- ( 0.1415, 0.2566)
7169 -- ( 0.1361, 0.2279)
7170 --cycle
7171 ;
7172 \path[hex/terrain/town/house,pic actions]
7173 ( 0.0834, 0.2379)
7174 -- ( 0.0888, 0.2667)
7175 -- ( 0.1415, 0.2566)
7176 -- ( 0.1361, 0.2279)
7177 --cycle
7178 ;
7179 \path[hex/terrain/town/house,pic actions]
7180 (-0.0207,-0.0604)
7181 -- (-0.0103,-0.0331)
7182 -- ( 0.0398,-0.0521)
7183 -- ( 0.0294,-0.0794)
7184 --cycle
7185 ;
7186 \path[hex/terrain/town/house,pic actions]
7187 (-0.0207,-0.0604)
7188 -- (-0.0103,-0.0331)
7189 -- ( 0.0398,-0.0521)
7190 -- ( 0.0294,-0.0794)
7191 --cycle
7192 ;
7193 \path[hex/terrain/town/house,pic actions]
7194 ( 0.3580,-0.4608)
7195 -- ( 0.3837,-0.4748)
7196 -- ( 0.3581,-0.5219)
7197 -- ( 0.3324,-0.5080)
7198 --cycle
7199 ;
7200 \path[hex/terrain/town/house,pic actions]
7201 ( 0.3580,-0.4608)
7202 -- ( 0.3837,-0.4748)
7203 -- ( 0.3581,-0.5219)
7204 -- ( 0.3324,-0.5080)
7205 --cycle
7206 ;
7207 \path[hex/terrain/town/house,pic actions]
7208 ( 0.5127,-0.3559)
7209 -- ( 0.5341,-0.3759)
7210 -- ( 0.4975,-0.4151)
7211 -- ( 0.4761,-0.3951)
7212 --cycle
7213 ;
7214 \path[hex/terrain/town/house,pic actions]
7215 ( 0.5127,-0.3559)

```

```

7216 -- ( 0.5341,-0.3759)
7217 -- ( 0.4975,-0.4151)
7218 -- ( 0.4761,-0.3951)
7219 --cycle
7220 ;
7221 \path[hex/terrain/town/house,pic actions]
7222 ( 0.2118,-0.3884)
7223 -- ( 0.2245,-0.3620)
7224 -- ( 0.2728,-0.3854)
7225 -- ( 0.2600,-0.4118)
7226 --cycle
7227 ;
7228 \path[hex/terrain/town/house,pic actions]
7229 ( 0.2118,-0.3884)
7230 -- ( 0.2245,-0.3620)
7231 -- ( 0.2728,-0.3854)
7232 -- ( 0.2600,-0.4118)
7233 --cycle
7234 ;
7235 \path[hex/terrain/town/house,pic actions]
7236 ( 0.1651,-0.4740)
7237 -- ( 0.1775,-0.4475)
7238 -- ( 0.2260,-0.4702)
7239 -- ( 0.2137,-0.4968)
7240 --cycle
7241 ;
7242 \path[hex/terrain/town/house,pic actions]
7243 ( 0.1651,-0.4740)
7244 -- ( 0.1775,-0.4475)
7245 -- ( 0.2260,-0.4702)
7246 -- ( 0.2137,-0.4968)
7247 --cycle
7248 ;
7249 \path[hex/terrain/town/house,pic actions]
7250 ( 0.2834,-0.4196)
7251 -- ( 0.2957,-0.3932)
7252 -- ( 0.3443,-0.4159)
7253 -- ( 0.3319,-0.4423)
7254 --cycle
7255 ;
7256 \path[hex/terrain/town/house,pic actions]
7257 ( 0.2834,-0.4196)
7258 -- ( 0.2957,-0.3932)
7259 -- ( 0.3443,-0.4159)
7260 -- ( 0.3319,-0.4423)
7261 --cycle
7262 ;
7263 \path[hex/terrain/town/house,pic actions]
7264 ( 0.1447,-0.5170)
7265 -- ( 0.1555,-0.4899)
7266 -- ( 0.2053,-0.5096)
7267 -- ( 0.1945,-0.5368)
7268 --cycle

```

```

7269 ;
7270 \path[hex/terrain/town/house,pic actions]
7271 ( 0.1447,-0.5170)
7272 -- ( 0.1555,-0.4899)
7273 -- ( 0.2053,-0.5096)
7274 -- ( 0.1945,-0.5368)
7275 --cycle
7276 ;
7277 \path[hex/terrain/town/house,pic actions]
7278 ( 0.0154,-0.5671)
7279 -- ( 0.0244,-0.5392)
7280 -- ( 0.0754,-0.5558)
7281 -- ( 0.0664,-0.5836)
7282 --cycle
7283 ;
7284 \path[hex/terrain/town/house,pic actions]
7285 ( 0.0154,-0.5671)
7286 -- ( 0.0244,-0.5392)
7287 -- ( 0.0754,-0.5558)
7288 -- ( 0.0664,-0.5836)
7289 --cycle
7290 ;
7291 \path[hex/terrain/town/house,pic actions]
7292 (-0.2958,-0.3614)
7293 -- (-0.2707,-0.3764)
7294 -- (-0.2983,-0.4224)
7295 -- (-0.3234,-0.4073)
7296 --cycle
7297 ;
7298 \path[hex/terrain/town/house,pic actions]
7299 (-0.2958,-0.3614)
7300 -- (-0.2707,-0.3764)
7301 -- (-0.2983,-0.4224)
7302 -- (-0.3234,-0.4073)
7303 --cycle
7304 ;
7305 \path[hex/terrain/town/house,pic actions]
7306 (-0.3024,-0.2385)
7307 -- (-0.2753,-0.2491)
7308 -- (-0.2948,-0.2990)
7309 -- (-0.3220,-0.2883)
7310 --cycle
7311 ;
7312 \path[hex/terrain/town/house,pic actions]
7313 (-0.3024,-0.2385)
7314 -- (-0.2753,-0.2491)
7315 -- (-0.2948,-0.2990)
7316 -- (-0.3220,-0.2883)
7317 --cycle
7318 ;
7319 \path[hex/terrain/town/house,pic actions]
7320 (-0.5719,-0.2295)
7321 -- (-0.5577,-0.2550)

```

```

7322  -- (-0.6045,-0.2811)
7323  -- (-0.6187,-0.2556)
7324  --cycle
7325  ;
7326  \path[hex/terrain/town/house,pic actions]
7327  (-0.5719,-0.2295)
7328  -- (-0.5577,-0.2550)
7329  -- (-0.6045,-0.2811)
7330  -- (-0.6187,-0.2556)
7331  --cycle
7332  ;
7333  \path[hex/terrain/town/house,pic actions]
7334  (-0.5909,-0.3922)
7335  -- (-0.5677,-0.3744)
7336  -- (-0.5351,-0.4170)
7337  -- (-0.5584,-0.4348)
7338  --cycle
7339  ;
7340  \path[hex/terrain/town/house,pic actions]
7341  (-0.5909,-0.3922)
7342  -- (-0.5677,-0.3744)
7343  -- (-0.5351,-0.4170)
7344  -- (-0.5584,-0.4348)
7345  --cycle
7346  ;
7347  \path[hex/terrain/town/house,pic actions]
7348  (-0.4367,-0.3858)
7349  -- (-0.4233,-0.4119)
7350  -- (-0.4709,-0.4364)
7351  -- (-0.4843,-0.4105)
7352  --cycle
7353  ;
7354  \path[hex/terrain/town/house,pic actions]
7355  (-0.4367,-0.3858)
7356  -- (-0.4233,-0.4119)
7357  -- (-0.4709,-0.4364)
7358  -- (-0.4843,-0.4105)
7359  --cycle
7360  ;
7361  \path[hex/terrain/town/house,pic actions]
7362  (-0.6605,-0.4272)
7363  -- (-0.6489,-0.4540)
7364  -- (-0.6982,-0.4752)
7365  -- (-0.7097,-0.4483)
7366  --cycle
7367  ;
7368  \path[hex/terrain/town/house,pic actions]
7369  (-0.6605,-0.4272)
7370  -- (-0.6489,-0.4540)
7371  -- (-0.6982,-0.4752)
7372  -- (-0.7097,-0.4483)
7373  --cycle
7374  ;

```

```

7375 \path[hex/terrain/town/house,pic actions]
7376 ( 0.2694,-0.2379)
7377 -- ( 0.2777,-0.2098)
7378 -- ( 0.3291,-0.2250)
7379 -- ( 0.3209,-0.2530)
7380 --cycle
7381 ;
7382 \path[hex/terrain/town/house,pic actions]
7383 ( 0.2694,-0.2379)
7384 -- ( 0.2777,-0.2098)
7385 -- ( 0.3291,-0.2250)
7386 -- ( 0.3209,-0.2530)
7387 --cycle
7388 ;
7389 \path[hex/terrain/town/house,pic actions]
7390 ( 0.1131,-0.3134)
7391 -- ( 0.1237,-0.2861)
7392 -- ( 0.1737,-0.3055)
7393 -- ( 0.1630,-0.3328)
7394 --cycle
7395 ;
7396 \path[hex/terrain/town/house,pic actions]
7397 ( 0.1131,-0.3134)
7398 -- ( 0.1237,-0.2861)
7399 -- ( 0.1737,-0.3055)
7400 -- ( 0.1630,-0.3328)
7401 --cycle
7402 ;
7403 \path[hex/terrain/town/house,pic actions]
7404 ( 0.1931,-0.0936)
7405 -- ( 0.2058,-0.0673)
7406 -- ( 0.2541,-0.0904)
7407 -- ( 0.2415,-0.1168)
7408 --cycle
7409 ;
7410 \path[hex/terrain/town/house,pic actions]
7411 ( 0.1931,-0.0936)
7412 -- ( 0.2058,-0.0673)
7413 -- ( 0.2541,-0.0904)
7414 -- ( 0.2415,-0.1168)
7415 --cycle
7416 ;
7417 \path[hex/terrain/town/house,pic actions]
7418 ( 0.1779, 0.1198)
7419 -- ( 0.1984, 0.0990)
7420 -- ( 0.1603, 0.0613)
7421 -- ( 0.1398, 0.0821)
7422 --cycle
7423 ;
7424 \path[hex/terrain/town/house,pic actions]
7425 ( 0.1779, 0.1198)
7426 -- ( 0.1984, 0.0990)
7427 -- ( 0.1603, 0.0613)

```

```

7428 -- ( 0.1398, 0.0821)
7429 --cycle
7430 ;
7431 \path[hex/terrain/town/house,pic actions]
7432 ( 0.2761, 0.3992)
7433 -- ( 0.2947, 0.3765)
7434 -- ( 0.2533, 0.3425)
7435 -- ( 0.2347, 0.3651)
7436 --cycle
7437 ;
7438 \path[hex/terrain/town/house,pic actions]
7439 ( 0.2761, 0.3992)
7440 -- ( 0.2947, 0.3765)
7441 -- ( 0.2533, 0.3425)
7442 -- ( 0.2347, 0.3651)
7443 --cycle
7444 ;
7445 \path[hex/terrain/town/house,pic actions]
7446 ( 0.3227, 0.3548)
7447 -- ( 0.3421, 0.3329)
7448 -- ( 0.3020, 0.2974)
7449 -- ( 0.2826, 0.3192)
7450 --cycle
7451 ;
7452 \path[hex/terrain/town/house,pic actions]
7453 ( 0.3227, 0.3548)
7454 -- ( 0.3421, 0.3329)
7455 -- ( 0.3020, 0.2974)
7456 -- ( 0.2826, 0.3192)
7457 --cycle
7458 ;
7459 \path[hex/terrain/town/house,pic actions]
7460 (-0.2473, 0.2770)
7461 -- (-0.2380, 0.3048)
7462 -- (-0.1871, 0.2879)
7463 -- (-0.1964, 0.2601)
7464 --cycle
7465 ;
7466 \path[hex/terrain/town/house,pic actions]
7467 (-0.2473, 0.2770)
7468 -- (-0.2380, 0.3048)
7469 -- (-0.1871, 0.2879)
7470 -- (-0.1964, 0.2601)
7471 --cycle
7472 ;
7473 \path[hex/terrain/town/house,pic actions]
7474 (-0.1395, 0.3602)
7475 -- (-0.1127, 0.3488)
7476 -- (-0.1335, 0.2995)
7477 -- (-0.1604, 0.3109)
7478 --cycle
7479 ;
7480 \path[hex/terrain/town/house,pic actions]

```

```

7481 (-0.1395, 0.3602)
7482 -- (-0.1127, 0.3488)
7483 -- (-0.1335, 0.2995)
7484 -- (-0.1604, 0.3109)
7485 --cycle
7486 ;
7487 \path[hex/terrain/town/house,pic actions]
7488 ( 0.2901, 0.6234)
7489 -- ( 0.3088, 0.6008)
7490 -- ( 0.2674, 0.5667)
7491 -- ( 0.2487, 0.5893)
7492 --cycle
7493 ;
7494 \path[hex/terrain/town/house,pic actions]
7495 ( 0.2901, 0.6234)
7496 -- ( 0.3088, 0.6008)
7497 -- ( 0.2674, 0.5667)
7498 -- ( 0.2487, 0.5893)
7499 --cycle
7500 ;
7501 \path[hex/terrain/town/house,pic actions]
7502 (-0.3456, 0.2854)
7503 -- (-0.3335, 0.3120)
7504 -- (-0.2847, 0.2898)
7505 -- (-0.2968, 0.2632)
7506 --cycle
7507 ;
7508 \path[hex/terrain/town/house,pic actions]
7509 (-0.3456, 0.2854)
7510 -- (-0.3335, 0.3120)
7511 -- (-0.2847, 0.2898)
7512 -- (-0.2968, 0.2632)
7513 --cycle
7514 ;
7515 \path[hex/terrain/town/house,pic actions]
7516 (-0.3040, 0.3746)
7517 -- (-0.2919, 0.4012)
7518 -- (-0.2431, 0.3791)
7519 -- (-0.2552, 0.3524)
7520 --cycle
7521 ;
7522 \path[hex/terrain/town/house,pic actions]
7523 (-0.3040, 0.3746)
7524 -- (-0.2919, 0.4012)
7525 -- (-0.2431, 0.3791)
7526 -- (-0.2552, 0.3524)
7527 --cycle
7528 ;
7529 \path[hex/terrain/town/house,pic actions]
7530 (-0.7420,-0.2456)
7531 -- (-0.7302,-0.2189)
7532 -- (-0.6812,-0.2407)
7533 -- (-0.6930,-0.2674)

```

```

7534  --cycle
7535  ;
7536  \path[hex/terrain/town/house,pic actions]
7537  (-0.7420,-0.2456)
7538  -- (-0.7302,-0.2189)
7539  -- (-0.6812,-0.2407)
7540  -- (-0.6930,-0.2674)
7541  --cycle
7542  ;
7543  \path[hex/terrain/town/house,pic actions]
7544  (-0.6678,-0.1369)
7545  -- (-0.6492,-0.1143)
7546  -- (-0.6078,-0.1484)
7547  -- (-0.6264,-0.1710)
7548  --cycle
7549  ;
7550  \path[hex/terrain/town/house,pic actions]
7551  (-0.6678,-0.1369)
7552  -- (-0.6492,-0.1143)
7553  -- (-0.6078,-0.1484)
7554  -- (-0.6264,-0.1710)
7555  --cycle
7556  ;
7557  \path[hex/terrain/town/house,pic actions]
7558  (-0.2252,-0.0023)
7559  -- (-0.1960,-0.0023)
7560  -- (-0.1960,-0.0559)
7561  -- (-0.2252,-0.0559)
7562  --cycle
7563  ;
7564  \path[hex/terrain/town/house,pic actions]
7565  (-0.2252,-0.0023)
7566  -- (-0.1960,-0.0023)
7567  -- (-0.1960,-0.0559)
7568  -- (-0.2252,-0.0559)
7569  --cycle
7570  ;
7571  \path[hex/terrain/town/house,pic actions]
7572  (-0.0041,-0.2944)
7573  -- ( 0.0064,-0.2671)
7574  -- ( 0.0564,-0.2862)
7575  -- ( 0.0460,-0.3135)
7576  --cycle
7577  ;
7578  \path[hex/terrain/town/house,pic actions]
7579  (-0.0041,-0.2944)
7580  -- ( 0.0064,-0.2671)
7581  -- ( 0.0564,-0.2862)
7582  -- ( 0.0460,-0.3135)
7583  --cycle
7584  ;
7585  \path[hex/terrain/town/house,pic actions]
7586  (-0.1877,-0.2296)

```

```

7587 -- (-0.1764,-0.2026)
7588 -- (-0.1270,-0.2233)
7589 -- (-0.1383,-0.2503)
7590 --cycle
7591 ;
7592 \path[hex/terrain/town/house,pic actions]
7593 (-0.1877,-0.2296)
7594 -- (-0.1764,-0.2026)
7595 -- (-0.1270,-0.2233)
7596 -- (-0.1383,-0.2503)
7597 --cycle
7598 ;
7599 \path[hex/terrain/town/house,pic actions]
7600 (-0.1170,-0.3014)
7601 -- (-0.1067,-0.2740)
7602 -- (-0.0566,-0.2928)
7603 -- (-0.0668,-0.3202)
7604 --cycle
7605 ;
7606 \path[hex/terrain/town/house,pic actions]
7607 (-0.1170,-0.3014)
7608 -- (-0.1067,-0.2740)
7609 -- (-0.0566,-0.2928)
7610 -- (-0.0668,-0.3202)
7611 --cycle
7612 ;
7613 \path[hex/terrain/town/house,pic actions]
7614 (-0.0719,-0.3499)
7615 -- (-0.0428,-0.3468)
7616 -- (-0.0371,-0.4001)
7617 -- (-0.0661,-0.4032)
7618 --cycle
7619 ;
7620 \path[hex/terrain/town/house,pic actions]
7621 (-0.0719,-0.3499)
7622 -- (-0.0428,-0.3468)
7623 -- (-0.0371,-0.4001)
7624 -- (-0.0661,-0.4032)
7625 --cycle
7626 ;
7627 \path[hex/terrain/town/house,pic actions]
7628 ( 0.4610, 0.0967)
7629 -- ( 0.4896, 0.0909)
7630 -- ( 0.4790, 0.0384)
7631 -- ( 0.4503, 0.0442)
7632 --cycle
7633 ;
7634 \path[hex/terrain/town/house,pic actions]
7635 ( 0.4610, 0.0967)
7636 -- ( 0.4896, 0.0909)
7637 -- ( 0.4790, 0.0384)
7638 -- ( 0.4503, 0.0442)
7639 --cycle

```

```

7640 ;
7641 \path[hex/terrain/town/house,pic actions]
7642 (-0.1944,-0.4810)
7643 -- (-0.1500,-0.4925)
7644 -- (-0.1653,-0.5515)
7645 -- (-0.2097,-0.5399)
7646 --cycle
7647 ;
7648 \path[hex/terrain/town/house,pic actions]
7649 (-0.1944,-0.4810)
7650 -- (-0.1500,-0.4925)
7651 -- (-0.1653,-0.5515)
7652 -- (-0.2097,-0.5399)
7653 --cycle
7654 ;
7655 \path[hex/terrain/town/house,pic actions]
7656 ( 0.2924,-0.1375)
7657 -- ( 0.3110,-0.0955)
7658 -- ( 0.3667,-0.1202)
7659 -- ( 0.3481,-0.1621)
7660 --cycle
7661 ;
7662 \path[hex/terrain/town/house,pic actions]
7663 ( 0.2924,-0.1375)
7664 -- ( 0.3110,-0.0955)
7665 -- ( 0.3667,-0.1202)
7666 -- ( 0.3481,-0.1621)
7667 --cycle
7668 ;
7669 \path[hex/terrain/town/house,pic actions]
7670 (-0.3062, 0.5810)
7671 -- (-0.2635, 0.5641)
7672 -- (-0.2859, 0.5075)
7673 -- (-0.3285, 0.5243)
7674 --cycle
7675 ;
7676 \path[hex/terrain/town/house,pic actions]
7677 (-0.3062, 0.5810)
7678 -- (-0.2635, 0.5641)
7679 -- (-0.2859, 0.5075)
7680 -- (-0.3285, 0.5243)
7681 --cycle
7682 ;
7683 \path[hex/terrain/town/house,pic actions]
7684 ( 0.0310,-0.4661)
7685 -- ( 0.0449,-0.4224)
7686 -- ( 0.1029,-0.4409)
7687 -- ( 0.0889,-0.4846)
7688 --cycle
7689 ;
7690 \path[hex/terrain/town/house,pic actions]
7691 ( 0.0310,-0.4661)
7692 -- ( 0.0449,-0.4224)

```

```

7693 -- ( 0.1029,-0.4409)
7694 -- ( 0.0889,-0.4846)
7695 --cycle
7696 ;
7697 \path[hex/terrain/town/house,pic actions]
7698 ( 0.1523,-0.2013)
7699 -- ( 0.1718,-0.1598)
7700 -- ( 0.2270,-0.1857)
7701 -- ( 0.2075,-0.2272)
7702 --cycle
7703 ;
7704 \path[hex/terrain/town/house,pic actions]
7705 ( 0.1523,-0.2013)
7706 -- ( 0.1718,-0.1598)
7707 -- ( 0.2270,-0.1857)
7708 -- ( 0.2075,-0.2272)
7709 --cycle
7710 ;
7711 \path[hex/terrain/town/house,pic actions]
7712 ( 0.0857,-0.3676)
7713 -- ( 0.1052,-0.3261)
7714 -- ( 0.1603,-0.3520)
7715 -- ( 0.1409,-0.3935)
7716 --cycle
7717 ;
7718 \path[hex/terrain/town/house,pic actions]
7719 ( 0.0857,-0.3676)
7720 -- ( 0.1052,-0.3261)
7721 -- ( 0.1603,-0.3520)
7722 -- ( 0.1409,-0.3935)
7723 --cycle
7724 ;
7725 \path[hex/terrain/town/house,pic actions]
7726 ( 0.0204,-0.2046)
7727 -- ( 0.0398,-0.1631)
7728 -- ( 0.0950,-0.1890)
7729 -- ( 0.0755,-0.2305)
7730 --cycle
7731 ;
7732 \path[hex/terrain/town/house,pic actions]
7733 ( 0.0204,-0.2046)
7734 -- ( 0.0398,-0.1631)
7735 -- ( 0.0950,-0.1890)
7736 -- ( 0.0755,-0.2305)
7737 --cycle
7738 ;
7739 \path[hex/terrain/town/house,pic actions]
7740 ( 0.5094, 0.3292)
7741 -- ( 0.5505, 0.3494)
7742 -- ( 0.5773, 0.2947)
7743 -- ( 0.5362, 0.2746)
7744 --cycle
7745 ;

```

```

7746 \path[hex/terrain/town/house,pic actions]
7747 ( 0.5094, 0.3292)
7748 -- ( 0.5505, 0.3494)
7749 -- ( 0.5773, 0.2947)
7750 -- ( 0.5362, 0.2746)
7751 --cycle
7752 ;
7753 \path[hex/terrain/town/house,pic actions]
7754 (-0.0647, 0.4710)
7755 -- (-0.0215, 0.4559)
7756 -- (-0.0416, 0.3984)
7757 -- (-0.0848, 0.4135)
7758 --cycle
7759 ;
7760 \path[hex/terrain/town/house,pic actions]
7761 (-0.0647, 0.4710)
7762 -- (-0.0215, 0.4559)
7763 -- (-0.0416, 0.3984)
7764 -- (-0.0848, 0.4135)
7765 --cycle
7766 ;
7767 \path[hex/terrain/town/house,pic actions]
7768 (-0.1476,-0.3704)
7769 -- (-0.1403,-0.3251)
7770 -- (-0.0802,-0.3347)
7771 -- (-0.0873,-0.3799)
7772 --cycle
7773 ;
7774 \path[hex/terrain/town/house,pic actions]
7775 (-0.1476,-0.3704)
7776 -- (-0.1403,-0.3251)
7777 -- (-0.0802,-0.3347)
7778 -- (-0.0873,-0.3799)
7779 --cycle
7780 ;
7781 \path[hex/terrain/town/house,pic actions]
7782 (-0.0755, 0.3210)
7783 -- (-0.0531, 0.3610)
7784 -- ( 0.0001, 0.3312)
7785 -- (-0.0224, 0.2912)
7786 --cycle
7787 ;
7788 \path[hex/terrain/town/house,pic actions]
7789 (-0.0755, 0.3210)
7790 -- (-0.0531, 0.3610)
7791 -- ( 0.0001, 0.3312)
7792 -- (-0.0224, 0.2912)
7793 --cycle
7794 ;
7795 \path[hex/terrain/town/house,pic actions]
7796 (-0.1354, 0.0442)
7797 -- (-0.1129, 0.0842)
7798 -- (-0.0599, 0.0544)

```

```

7799 -- (-0.0823, 0.0144)
7800 --cycle
7801 ;
7802 \path[hex/terrain/town/house,pic actions]
7803 (-0.1354, 0.0442)
7804 -- (-0.1129, 0.0842)
7805 -- (-0.0599, 0.0544)
7806 -- (-0.0823, 0.0144)
7807 --cycle
7808 ;
7809 \path[hex/terrain/town/house,pic actions]
7810 (-0.1672,-0.0608)
7811 -- (-0.1524,-0.0175)
7812 -- (-0.0948,-0.0371)
7813 -- (-0.1096,-0.0805)
7814 --cycle
7815 ;
7816 \path[hex/terrain/town/house,pic actions]
7817 (-0.1672,-0.0608)
7818 -- (-0.1524,-0.0175)
7819 -- (-0.0948,-0.0371)
7820 -- (-0.1096,-0.0805)
7821 --cycle
7822 ;
7823 \path[hex/terrain/town/house,pic actions]
7824 ( 0.0920,-0.6296)
7825 -- ( 0.1069,-0.5863)
7826 -- ( 0.1645,-0.6060)
7827 -- ( 0.1497,-0.6493)
7828 --cycle
7829 ;
7830 \path[hex/terrain/town/house,pic actions]
7831 ( 0.0920,-0.6296)
7832 -- ( 0.1069,-0.5863)
7833 -- ( 0.1645,-0.6060)
7834 -- ( 0.1497,-0.6493)
7835 --cycle
7836 ;
7837 \path[hex/terrain/town/house,pic actions]
7838 ( 0.4115,-0.5373)
7839 -- ( 0.4390,-0.5006)
7840 -- ( 0.4877,-0.5372)
7841 -- ( 0.4601,-0.5739)
7842 --cycle
7843 ;
7844 \path[hex/terrain/town/house,pic actions]
7845 ( 0.4115,-0.5373)
7846 -- ( 0.4390,-0.5006)
7847 -- ( 0.4877,-0.5372)
7848 -- ( 0.4601,-0.5739)
7849 --cycle
7850 ;
7851 \path[hex/terrain/town/house,pic actions]

```

```

7852      ( 0.3095, 0.1272)
7853      -- ( 0.3519, 0.1095)
7854      -- ( 0.3284, 0.0533)
7855      -- ( 0.2861, 0.0710)
7856      --cycle
7857      ;
7858      \path[hex/terrain/town/house,pic actions]
7859      ( 0.3095, 0.1272)
7860      -- ( 0.3519, 0.1095)
7861      -- ( 0.3284, 0.0533)
7862      -- ( 0.2861, 0.0710)
7863      --cycle
7864      ;
7865      \path[hex/terrain/town/house,pic actions]
7866      (-0.3558, 0.0291)
7867      -- (-0.3124, 0.0144)
7868      -- (-0.3318,-0.0433)
7869      -- (-0.3753,-0.0287)
7870      --cycle
7871      ;
7872      \path[hex/terrain/town/house,pic actions]
7873      (-0.3558, 0.0291)
7874      -- (-0.3124, 0.0144)
7875      -- (-0.3318,-0.0433)
7876      -- (-0.3753,-0.0287)
7877      --cycle
7878      ;
7879      \path[hex/terrain/town/house,pic actions]
7880      ( 0.2904, 0.2714)
7881      -- ( 0.3361, 0.2681)
7882      -- ( 0.3318, 0.2074)
7883      -- ( 0.2861, 0.2106)
7884      --cycle
7885      ;
7886      \path[hex/terrain/town/house,pic actions]
7887      ( 0.2904, 0.2714)
7888      -- ( 0.3361, 0.2681)
7889      -- ( 0.3318, 0.2074)
7890      -- ( 0.2861, 0.2106)
7891      --cycle
7892      ;
7893      \path[hex/terrain/town/house,pic actions]
7894      (-0.0124, 0.1558)
7895      -- ( 0.0333, 0.1525)
7896      -- ( 0.0290, 0.0918)
7897      -- (-0.0167, 0.0950)
7898      --cycle
7899      ;
7900      \path[hex/terrain/town/house,pic actions]
7901      (-0.0124, 0.1558)
7902      -- ( 0.0333, 0.1525)
7903      -- ( 0.0290, 0.0918)
7904      -- (-0.0167, 0.0950)

```

```

7905  --cycle
7906  ;
7907  \path[hex/terrain/town/house,pic actions]
7908  ( 0.4665, 0.4396)
7909  -- ( 0.4868, 0.3985)
7910  -- ( 0.4321, 0.3716)
7911  -- ( 0.4119, 0.4127)
7912  --cycle
7913  ;
7914  \path[hex/terrain/town/house,pic actions]
7915  ( 0.4665, 0.4396)
7916  -- ( 0.4868, 0.3985)
7917  -- ( 0.4321, 0.3716)
7918  -- ( 0.4119, 0.4127)
7919  --cycle
7920  ;
7921  \path[hex/terrain/town/house,pic actions]
7922  (-0.2433,-0.1480)
7923  -- (-0.2141,-0.1472)
7924  -- (-0.2127,-0.2008)
7925  -- (-0.2419,-0.2015)
7926  --cycle
7927  ;
7928  \path[hex/terrain/town/house,pic actions]
7929  (-0.2433,-0.1480)
7930  -- (-0.2141,-0.1472)
7931  -- (-0.2127,-0.2008)
7932  -- (-0.2419,-0.2015)
7933  --cycle
7934  ;
7935  \path[hex/terrain/town/house,pic actions]
7936  ( 0.4187, 0.2523)
7937  -- ( 0.4643, 0.2574)
7938  -- ( 0.4711, 0.1969)
7939  -- ( 0.4256, 0.1917)
7940  --cycle
7941  ;
7942  \path[hex/terrain/town/house,pic actions]
7943  ( 0.4187, 0.2523)
7944  -- ( 0.4643, 0.2574)
7945  -- ( 0.4711, 0.1969)
7946  -- ( 0.4256, 0.1917)
7947  --cycle
7948  ;
7949  \path[hex/terrain/town/house,pic actions]
7950  (-0.2599,-0.2379)
7951  -- (-0.2164,-0.2525)
7952  -- (-0.2358,-0.3102)
7953  -- (-0.2793,-0.2955)
7954  --cycle
7955  ;
7956  \path[hex/terrain/town/house,pic actions]
7957  (-0.2599,-0.2379)

```

```

7958 -- (-0.2164,-0.2525)
7959 -- (-0.2358,-0.3102)
7960 -- (-0.2793,-0.2955)
7961 --cycle
7962 ;
7963 \path[hex/terrain/town/house,pic actions]
7964 ( 0.0167, 0.0438)
7965 -- ( 0.0385, 0.0365)
7966 -- ( 0.0301, 0.0113)
7967 -- ( 0.0082, 0.0187)
7968 --cycle
7969 ;
7970 \path[hex/terrain/town/house,pic actions]
7971 ( 0.0167, 0.0438)
7972 -- ( 0.0385, 0.0365)
7973 -- ( 0.0301, 0.0113)
7974 -- ( 0.0082, 0.0187)
7975 --cycle
7976 ;
7977 \path[hex/terrain/town/house,pic actions]
7978 (-0.2901,-0.1193)
7979 -- (-0.2450,-0.1273)
7980 -- (-0.2556,-0.1872)
7981 -- (-0.3008,-0.1792)
7982 --cycle
7983 ;
7984 \path[hex/terrain/town/house,pic actions]
7985 (-0.2901,-0.1193)
7986 -- (-0.2450,-0.1273)
7987 -- (-0.2556,-0.1872)
7988 -- (-0.3008,-0.1792)
7989 --cycle
7990 ;
7991 \path[hex/terrain/town/house,pic actions]
7992 ( 0.1275,-0.0001)
7993 -- ( 0.1734,-0.0022)
7994 -- ( 0.1707,-0.0630)
7995 -- ( 0.1248,-0.0610)
7996 --cycle
7997 ;
7998 \path[hex/terrain/town/house,pic actions]
7999 ( 0.1275,-0.0001)
8000 -- ( 0.1734,-0.0022)
8001 -- ( 0.1707,-0.0630)
8002 -- ( 0.1248,-0.0610)
8003 --cycle
8004 ;
8005 \path[hex/terrain/town/house,pic actions]
8006 (-0.0645,-0.5272)
8007 -- (-0.0415,-0.5245)
8008 -- (-0.0383,-0.5509)
8009 -- (-0.0612,-0.5536)
8010 --cycle

```

```

8011 ;
8012 \path[hex/terrain/town/house,pic actions]
8013 (-0.0645,-0.5272)
8014 -- (-0.0415,-0.5245)
8015 -- (-0.0383,-0.5509)
8016 -- (-0.0612,-0.5536)
8017 --cycle
8018 ;
8019 \path[hex/terrain/town/house,pic actions]
8020 (-0.3209, 0.2176)
8021 -- (-0.2989, 0.2105)
8022 -- (-0.3069, 0.1853)
8023 -- (-0.3289, 0.1923)
8024 --cycle
8025 ;
8026 \path[hex/terrain/town/house,pic actions]
8027 (-0.3209, 0.2176)
8028 -- (-0.2989, 0.2105)
8029 -- (-0.3069, 0.1853)
8030 -- (-0.3289, 0.1923)
8031 --cycle
8032 ;
8033 \path[hex/terrain/town/house,pic actions]
8034 ( 0.3746, 0.1600)
8035 -- ( 0.4021, 0.1699)
8036 -- ( 0.4204, 0.1195)
8037 -- ( 0.3929, 0.1095)
8038 --cycle
8039 ;
8040 \path[hex/terrain/town/house,pic actions]
8041 ( 0.3746, 0.1600)
8042 -- ( 0.4021, 0.1699)
8043 -- ( 0.4204, 0.1195)
8044 -- ( 0.3929, 0.1095)
8045 --cycle
8046 ;
8047 }
8048 }
8049 \fi

```

hex/terrain/city

And finally a city



```

8050 \ifhex@terrain@pic
8051 \tikzset{
8052   hex/terrain/city/.pic={
8053     \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]

```

```

8054 ( 0.6475, 0.4068)
8055 -- ( 0.7314,-0.0575)
8056 -- ( 0.7314,-0.0575)
8057 ;
8058 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8059 ( 0.3200,-0.0497)
8060 -- ( 0.7360,-0.0572)
8061 -- ( 0.9222,-0.0903)
8062 -- ( 0.7082,-0.4210)
8063 ;
8064 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8065 ( 0.3828, 0.1855)
8066 -- ( 0.0279, 0.1945)
8067 ;
8068 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8069 ( 0.0433, 0.3473)
8070 -- ( 0.0217, 0.1444)
8071 ;
8072 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8073 ( 0.1413, 0.1884)
8074 -- ( 0.3369,-0.0066)
8075 ;
8076 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8077 (-0.1278, 0.7257)
8078 -- (-0.2203, 0.4496)
8079 ;
8080 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8081 ( 0.1602, 0.6526)
8082 -- ( 0.0382, 0.6110)
8083 -- (-0.1527, 0.6534)
8084 ;
8085 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8086 (-0.1688, 0.6051)
8087 -- (-0.4768, 0.7222)
8088 ;
8089 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8090 ( 0.3602,-0.4159)
8091 .. controls ( 0.4139,-0.2355) and ( 0.4139,-0.2352) .. ( 0.4139,-0.2352)
8092 -- ( 0.4838,-0.2184)
8093 -- ( 0.5251,-0.0570)
8094 ;
8095 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8096 ( 0.5443,-0.6880)
8097 -- ( 0.5887,-0.5618)
8098 -- ( 0.4781,-0.4650)
8099 -- ( 0.4781,-0.4650)
8100 ;
8101 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8102 ( 0.0671,-0.6564)
8103 -- ( 0.2799,-0.7025)
8104 -- ( 0.4360,-0.4711)
8105 ;
8106 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]

```

```

8107 ( 0.2023,-0.8374)
8108 -- ( 0.2231,-0.6909)
8109 ;
8110 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8111 ( 0.0433,-0.3639)
8112 -- (-0.0931,-0.5036)
8113 -- (-0.3798,-0.4049)
8114 -- (-0.4436,-0.4630)
8115 -- (-0.5468,-0.5027)
8116 -- (-0.6442,-0.3540)
8117 ;
8118 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8119 (-0.3296,-0.7486)
8120 -- (-0.3153,-0.6107)
8121 -- (-0.4388,-0.4598)
8122 ;
8123 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8124 (-0.3247,-0.6883)
8125 -- (-0.0201,-0.7169)
8126 -- ( 0.0501,-0.7042)
8127 ;
8128 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8129 ( 0.0616,-0.6541)
8130 -- (-0.0427,-0.6505)
8131 -- (-0.0229,-0.5387)
8132 ;
8133 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8134 ( 0.0040,-0.2086)
8135 -- (-0.1956,-0.1835)
8136 -- (-0.2290,-0.2265)
8137 -- (-0.5068,-0.1372)
8138 ;
8139 \path[hex/terrain/town/small road,pic actions,hex/terrain/town/post road]
8140 (-0.3396, 0.0437)
8141 -- (-0.2201, 0.4506)
8142 ;
8143 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8144 ( 0.0066, 0.8705)
8145 -- ( 0.3952, 0.3367)
8146 -- ( 0.3885, 0.2021)
8147 -- ( 0.3555, 0.1368)
8148 -- ( 0.3751, 0.0869)
8149 -- ( 0.2511,-0.2014)
8150 -- ( 0.1393,-0.4528)
8151 -- ( 0.0636,-0.6538)
8152 -- ( 0.0063,-0.8731)
8153 -- ( 0.0063,-0.8731)
8154 ;
8155 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8156 ( 0.1775, 0.6355)
8157 -- ( 0.4288, 0.7459)
8158 -- ( 0.5543, 0.5148)
8159 -- ( 0.5543, 0.5148)

```

```

8160 ;
8161 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8162 ( 0.7584, 0.4363)
8163 -- ( 0.3946, 0.3369)
8164 -- ( 0.3946, 0.3369)
8165 ;
8166 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8167 ( 0.1428,-0.4540)
8168 -- (-0.0329,-0.2925)
8169 -- ( 0.0739,-0.0364)
8170 -- ( 0.1645,-0.0483)
8171 ;
8172 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8173 ( 0.0723,-0.0367)
8174 -- (-0.5150, 0.0791)
8175 ;
8176 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8177 (-0.1911,-0.0821)
8178 -- (-0.0760, 0.3934)
8179 -- (-0.0774, 0.3920)
8180 ;
8181 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8182 ( 0.0439, 0.3452)
8183 -- (-0.3449, 0.4978)
8184 -- (-0.4614, 0.2954)
8185 -- (-0.4614, 0.2954)
8186 ;
8187 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8188 (-0.4152, 0.2683)
8189 -- (-0.7626, 0.4390)
8190 -- (-0.7626, 0.4390)
8191 ;
8192 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8193 (-0.5846, 0.3486)
8194 -- (-0.8106,-0.1286)
8195 -- (-0.7727,-0.2079)
8196 -- (-0.7053,-0.1745)
8197 ;
8198 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8199 (-0.7161,-0.1542)
8200 -- (-0.6166,-0.3381)
8201 -- (-0.7630,-0.4349)
8202 ;
8203 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8204 (-0.6697,-0.2422)
8205 -- (-0.4615,-0.1081)
8206 -- (-0.4615,-0.1081)
8207 ;
8208 \path[hex/terrain/town/road,pic actions,hex/terrain/town/post road]
8209 ( 0.2080,-0.3022)
8210 -- ( 0.4581,-0.4878)
8211 -- ( 0.5919,-0.3695)
8212 -- ( 0.7615,-0.4441)

```

```

8213 ;
8214 \path[hex/terrain/town/house,pic actions]
8215 ( 0.1146, 0.0405)
8216 -- ( 0.1598, 0.0323)
8217 -- ( 0.1489,-0.0277)
8218 -- ( 0.1036,-0.0196)
8219 --cycle
8220 ;
8221 \path[hex/terrain/town/house,pic actions]
8222 ( 0.1146, 0.0405)
8223 -- ( 0.1598, 0.0323)
8224 -- ( 0.1489,-0.0277)
8225 -- ( 0.1036,-0.0196)
8226 --cycle
8227 ;
8228 \path[hex/terrain/town/house,pic actions]
8229 (-0.0844, 0.4998)
8230 -- (-0.0599, 0.4835)
8231 -- (-0.0898, 0.4389)
8232 -- (-0.1141, 0.4551)
8233 --cycle
8234 ;
8235 \path[hex/terrain/town/house,pic actions]
8236 (-0.0844, 0.4998)
8237 -- (-0.0599, 0.4835)
8238 -- (-0.0898, 0.4389)
8239 -- (-0.1141, 0.4551)
8240 --cycle
8241 ;
8242 \path[hex/terrain/town/house,pic actions]
8243 (-0.6143,-0.0454)
8244 -- (-0.6005,-0.0196)
8245 -- (-0.5531,-0.0447)
8246 -- (-0.5668,-0.0707)
8247 --cycle
8248 ;
8249 \path[hex/terrain/town/house,pic actions]
8250 (-0.6143,-0.0454)
8251 -- (-0.6005,-0.0196)
8252 -- (-0.5531,-0.0447)
8253 -- (-0.5668,-0.0707)
8254 --cycle
8255 ;
8256 \path[hex/terrain/town/house,pic actions]
8257 (-0.3809,-0.0792)
8258 -- (-0.3371,-0.0929)
8259 -- (-0.3553,-0.1511)
8260 -- (-0.3991,-0.1375)
8261 --cycle
8262 ;
8263 \path[hex/terrain/town/house,pic actions]
8264 (-0.3809,-0.0792)
8265 -- (-0.3371,-0.0929)

```

```

8266 -- (-0.3553,-0.1511)
8267 -- (-0.3991,-0.1375)
8268 --cycle
8269 ;
8270 \path[hex/terrain/town/house,pic actions]
8271 (-0.5133, 0.1838)
8272 -- (-0.4733, 0.1613)
8273 -- (-0.5032, 0.1081)
8274 -- (-0.5433, 0.1307)
8275 --cycle
8276 ;
8277 \path[hex/terrain/town/house,pic actions]
8278 (-0.5133, 0.1838)
8279 -- (-0.4733, 0.1613)
8280 -- (-0.5032, 0.1081)
8281 -- (-0.5433, 0.1307)
8282 --cycle
8283 ;
8284 \path[hex/terrain/town/house,pic actions]
8285 (-0.3878, 0.1398)
8286 -- (-0.3421, 0.1442)
8287 -- (-0.3362, 0.0834)
8288 -- (-0.3819, 0.0790)
8289 --cycle
8290 ;
8291 \path[hex/terrain/town/house,pic actions]
8292 (-0.3878, 0.1398)
8293 -- (-0.3421, 0.1442)
8294 -- (-0.3362, 0.0834)
8295 -- (-0.3819, 0.0790)
8296 --cycle
8297 ;
8298 \path[hex/terrain/town/house,pic actions]
8299 (-0.5622, 0.0806)
8300 -- (-0.5234, 0.0560)
8301 -- (-0.5559, 0.0044)
8302 -- (-0.5948, 0.0290)
8303 --cycle
8304 ;
8305 \path[hex/terrain/town/house,pic actions]
8306 (-0.5622, 0.0806)
8307 -- (-0.5234, 0.0560)
8308 -- (-0.5559, 0.0044)
8309 -- (-0.5948, 0.0290)
8310 --cycle
8311 ;
8312 \path[hex/terrain/town/house,pic actions]
8313 (-0.6218, 0.1903)
8314 -- (-0.6097, 0.2346)
8315 -- (-0.5508, 0.2185)
8316 -- (-0.5629, 0.1742)
8317 --cycle
8318 ;

```

```

8319 \path[hex/terrain/town/house,pic actions]
8320 (-0.6218, 0.1903)
8321 -- (-0.6097, 0.2346)
8322 -- (-0.5508, 0.2185)
8323 -- (-0.5629, 0.1742)
8324 --cycle
8325 ;
8326 \path[hex/terrain/town/house,pic actions]
8327 (-0.2884, 0.7423)
8328 -- (-0.2596, 0.7372)
8329 -- (-0.2691, 0.6843)
8330 -- (-0.2980, 0.6895)
8331 --cycle
8332 ;
8333 \path[hex/terrain/town/house,pic actions]
8334 (-0.2884, 0.7423)
8335 -- (-0.2596, 0.7372)
8336 -- (-0.2691, 0.6843)
8337 -- (-0.2980, 0.6895)
8338 --cycle
8339 ;
8340 \path[hex/terrain/town/house,pic actions]
8341 ( 0.1219, 0.8731)
8342 -- ( 0.1475, 0.8350)
8343 -- ( 0.0970, 0.8008)
8344 -- ( 0.0712, 0.8389)
8345 --cycle
8346 ;
8347 \path[hex/terrain/town/house,pic actions]
8348 ( 0.1219, 0.8731)
8349 -- ( 0.1475, 0.8350)
8350 -- ( 0.0970, 0.8008)
8351 -- ( 0.0712, 0.8389)
8352 --cycle
8353 ;
8354 \path[hex/terrain/town/house,pic actions]
8355 ( 0.3659, 0.5557)
8356 -- ( 0.3913, 0.5175)
8357 -- ( 0.3405, 0.4837)
8358 -- ( 0.3150, 0.5219)
8359 --cycle
8360 ;
8361 \path[hex/terrain/town/house,pic actions]
8362 ( 0.3659, 0.5557)
8363 -- ( 0.3913, 0.5175)
8364 -- ( 0.3405, 0.4837)
8365 -- ( 0.3150, 0.5219)
8366 --cycle
8367 ;
8368 \path[hex/terrain/town/house,pic actions]
8369 ( 0.0626, 0.4298)
8370 -- ( 0.0896, 0.4184)
8371 -- ( 0.0686, 0.3690)

```

```

8372 -- ( 0.0416, 0.3804)
8373 --cycle
8374 ;
8375 \path[hex/terrain/town/house,pic actions]
8376 ( 0.0626, 0.4298)
8377 -- ( 0.0896, 0.4184)
8378 -- ( 0.0686, 0.3690)
8379 -- ( 0.0416, 0.3804)
8380 --cycle
8381 ;
8382 \path[hex/terrain/town/house,pic actions]
8383 (-0.4510,-0.3094)
8384 -- (-0.4058,-0.2887)
8385 -- (-0.3725,-0.3614)
8386 -- (-0.4176,-0.3821)
8387 --cycle
8388 ;
8389 \path[hex/terrain/town/house,pic actions]
8390 (-0.4510,-0.3094)
8391 -- (-0.4058,-0.2887)
8392 -- (-0.3725,-0.3614)
8393 -- (-0.4176,-0.3821)
8394 --cycle
8395 ;
8396 \path[hex/terrain/town/house,pic actions]
8397 (-0.5282,-0.1080)
8398 -- (-0.5533,-0.0695)
8399 -- (-0.5021,-0.0363)
8400 -- (-0.4770,-0.0749)
8401 --cycle
8402 ;
8403 \path[hex/terrain/town/house,pic actions]
8404 (-0.5282,-0.1080)
8405 -- (-0.5533,-0.0695)
8406 -- (-0.5021,-0.0363)
8407 -- (-0.4770,-0.0749)
8408 --cycle
8409 ;
8410 \path[hex/terrain/town/house,pic actions]
8411 ( 0.0108,-0.2602)
8412 -- ( 0.0173,-0.2316)
8413 -- ( 0.0696,-0.2435)
8414 -- ( 0.0632,-0.2721)
8415 --cycle
8416 ;
8417 \path[hex/terrain/town/house,pic actions]
8418 ( 0.0108,-0.2602)
8419 -- ( 0.0173,-0.2316)
8420 -- ( 0.0696,-0.2435)
8421 -- ( 0.0632,-0.2721)
8422 --cycle
8423 ;
8424 \path[hex/terrain/town/house,pic actions]

```

```

8425      (-0.1989, 0.1654)
8426      -- (-0.1544, 0.1540)
8427      -- (-0.1696, 0.0948)
8428      -- (-0.2141, 0.1063)
8429      --cycle
8430      ;
8431      \path[hex/terrain/town/house,pic actions]
8432      (-0.1989, 0.1654)
8433      -- (-0.1544, 0.1540)
8434      -- (-0.1696, 0.0948)
8435      -- (-0.2141, 0.1063)
8436      --cycle
8437      ;
8438      \path[hex/terrain/town/house,pic actions]
8439      (-0.0216,-0.0407)
8440      -- ( 0.0230,-0.0521)
8441      -- ( 0.0078,-0.1112)
8442      -- (-0.0368,-0.0997)
8443      --cycle
8444      ;
8445      \path[hex/terrain/town/house,pic actions]
8446      (-0.0216,-0.0407)
8447      -- ( 0.0230,-0.0521)
8448      -- ( 0.0078,-0.1112)
8449      -- (-0.0368,-0.0997)
8450      --cycle
8451      ;
8452      \path[hex/terrain/town/house,pic actions]
8453      ( 0.1936, 0.5180)
8454      -- ( 0.2045, 0.4909)
8455      -- ( 0.1547, 0.4709)
8456      -- ( 0.1437, 0.4981)
8457      --cycle
8458      ;
8459      \path[hex/terrain/town/house,pic actions]
8460      ( 0.1936, 0.5180)
8461      -- ( 0.2045, 0.4909)
8462      -- ( 0.1547, 0.4709)
8463      -- ( 0.1437, 0.4981)
8464      --cycle
8465      ;
8466      \path[hex/terrain/town/house,pic actions]
8467      (-0.1903, 0.4858)
8468      -- (-0.1678, 0.5258)
8469      -- (-0.1146, 0.4960)
8470      -- (-0.1371, 0.4559)
8471      --cycle
8472      ;
8473      \path[hex/terrain/town/house,pic actions]
8474      (-0.1903, 0.4858)
8475      -- (-0.1678, 0.5258)
8476      -- (-0.1146, 0.4960)
8477      -- (-0.1371, 0.4559)

```

```

8478 --cycle
8479 ;
8480 \path[hex/terrain/town/house,pic actions]
8481 ( 0.1470, 0.3493)
8482 -- ( 0.1689, 0.3567)
8483 -- ( 0.1775, 0.3315)
8484 -- ( 0.1555, 0.3241)
8485 --cycle
8486 ;
8487 \path[hex/terrain/town/house,pic actions]
8488 ( 0.1470, 0.3493)
8489 -- ( 0.1689, 0.3567)
8490 -- ( 0.1775, 0.3315)
8491 -- ( 0.1555, 0.3241)
8492 --cycle
8493 ;
8494 \path[hex/terrain/town/house,pic actions]
8495 ( 0.1892, 0.2562)
8496 -- ( 0.2118, 0.2510)
8497 -- ( 0.2058, 0.2251)
8498 -- ( 0.1833, 0.2303)
8499 --cycle
8500 ;
8501 \path[hex/terrain/town/house,pic actions]
8502 ( 0.1892, 0.2562)
8503 -- ( 0.2118, 0.2510)
8504 -- ( 0.2058, 0.2251)
8505 -- ( 0.1833, 0.2303)
8506 --cycle
8507 ;
8508 \path[hex/terrain/town/house,pic actions]
8509 ( 0.8016, 0.0292)
8510 -- ( 0.8235, 0.0367)
8511 -- ( 0.8321, 0.0116)
8512 -- ( 0.8103, 0.0040)
8513 --cycle
8514 ;
8515 \path[hex/terrain/town/house,pic actions]
8516 ( 0.8016, 0.0292)
8517 -- ( 0.8235, 0.0367)
8518 -- ( 0.8321, 0.0116)
8519 -- ( 0.8103, 0.0040)
8520 --cycle
8521 ;
8522 \path[hex/terrain/town/house,pic actions]
8523 ( 0.7392, 0.1737)
8524 -- ( 0.7609, 0.1816)
8525 -- ( 0.7702, 0.1568)
8526 -- ( 0.7485, 0.1487)
8527 --cycle
8528 ;
8529 \path[hex/terrain/town/house,pic actions]
8530 ( 0.7392, 0.1737)

```

```

8531 -- ( 0.7609, 0.1816)
8532 -- ( 0.7702, 0.1568)
8533 -- ( 0.7485, 0.1487)
8534 --cycle
8535 ;
8536 \path[hex/terrain/town/house,pic actions]
8537 ( 0.3736, 0.7805)
8538 -- ( 0.3937, 0.7921)
8539 -- ( 0.4071, 0.7691)
8540 -- ( 0.3870, 0.7575)
8541 --cycle
8542 ;
8543 \path[hex/terrain/town/house,pic actions]
8544 ( 0.3736, 0.7805)
8545 -- ( 0.3937, 0.7921)
8546 -- ( 0.4071, 0.7691)
8547 -- ( 0.3870, 0.7575)
8548 --cycle
8549 ;
8550 \path[hex/terrain/town/house,pic actions]
8551 (-0.4808,-0.6251)
8552 -- (-0.4706,-0.6459)
8553 -- (-0.4946,-0.6576)
8554 -- (-0.5047,-0.6368)
8555 --cycle
8556 ;
8557 \path[hex/terrain/town/house,pic actions]
8558 (-0.4808,-0.6251)
8559 -- (-0.4706,-0.6459)
8560 -- (-0.4946,-0.6576)
8561 -- (-0.5047,-0.6368)
8562 --cycle
8563 ;
8564 \path[hex/terrain/town/house,pic actions]
8565 (-0.4514,-0.6075)
8566 -- (-0.4393,-0.6272)
8567 -- (-0.4620,-0.6412)
8568 -- (-0.4740,-0.6215)
8569 --cycle
8570 ;
8571 \path[hex/terrain/town/house,pic actions]
8572 (-0.4514,-0.6075)
8573 -- (-0.4393,-0.6272)
8574 -- (-0.4620,-0.6412)
8575 -- (-0.4740,-0.6215)
8576 --cycle
8577 ;
8578 \path[hex/terrain/town/house,pic actions]
8579 (-0.2390,-0.7174)
8580 -- (-0.2175,-0.7260)
8581 -- (-0.2273,-0.7508)
8582 -- (-0.2489,-0.7421)
8583 --cycle

```

```

8584 ;
8585 \path[hex/terrain/town/house,pic actions]
8586 (-0.2390,-0.7174)
8587 -- (-0.2175,-0.7260)
8588 -- (-0.2273,-0.7508)
8589 -- (-0.2489,-0.7421)
8590 --cycle
8591 ;
8592 \path[hex/terrain/town/house,pic actions]
8593 (-0.2386,-0.5506)
8594 -- (-0.2108,-0.5598)
8595 -- (-0.2277,-0.6108)
8596 -- (-0.2555,-0.6015)
8597 --cycle
8598 ;
8599 \path[hex/terrain/town/house,pic actions]
8600 (-0.2386,-0.5506)
8601 -- (-0.2108,-0.5598)
8602 -- (-0.2277,-0.6108)
8603 -- (-0.2555,-0.6015)
8604 --cycle
8605 ;
8606 \path[hex/terrain/town/house,pic actions]
8607 (-0.3574, 0.2226)
8608 -- (-0.3530, 0.2515)
8609 -- (-0.2999, 0.2435)
8610 -- (-0.3043, 0.2145)
8611 --cycle
8612 ;
8613 \path[hex/terrain/town/house,pic actions]
8614 (-0.3574, 0.2226)
8615 -- (-0.3530, 0.2515)
8616 -- (-0.2999, 0.2435)
8617 -- (-0.3043, 0.2145)
8618 --cycle
8619 ;
8620 \path[hex/terrain/town/house,pic actions]
8621 (-0.3315, 0.3242)
8622 -- (-0.3271, 0.3532)
8623 -- (-0.2740, 0.3451)
8624 -- (-0.2783, 0.3162)
8625 --cycle
8626 ;
8627 \path[hex/terrain/town/house,pic actions]
8628 (-0.3315, 0.3242)
8629 -- (-0.3271, 0.3532)
8630 -- (-0.2740, 0.3451)
8631 -- (-0.2783, 0.3162)
8632 --cycle
8633 ;
8634 \path[hex/terrain/town/house,pic actions]
8635 ( 0.2256, 0.4895)
8636 -- ( 0.2451, 0.4676)

```

```

8637 -- ( 0.2049, 0.4320)
8638 -- ( 0.1854, 0.4539)
8639 --cycle
8640 ;
8641 \path[hex/terrain/town/house,pic actions]
8642 ( 0.2256, 0.4895)
8643 -- ( 0.2451, 0.4676)
8644 -- ( 0.2049, 0.4320)
8645 -- ( 0.1854, 0.4539)
8646 --cycle
8647 ;
8648 \path[hex/terrain/town/house,pic actions]
8649 ( 0.1717, 0.5777)
8650 -- ( 0.1903, 0.5551)
8651 -- ( 0.1488, 0.5210)
8652 -- ( 0.1302, 0.5436)
8653 --cycle
8654 ;
8655 \path[hex/terrain/town/house,pic actions]
8656 ( 0.1717, 0.5777)
8657 -- ( 0.1903, 0.5551)
8658 -- ( 0.1488, 0.5210)
8659 -- ( 0.1302, 0.5436)
8660 --cycle
8661 ;
8662 \path[hex/terrain/town/house,pic actions]
8663 (-0.0995, 0.2545)
8664 -- (-0.0891, 0.2819)
8665 -- (-0.0389, 0.2629)
8666 -- (-0.0492, 0.2355)
8667 --cycle
8668 ;
8669 \path[hex/terrain/town/house,pic actions]
8670 (-0.0995, 0.2545)
8671 -- (-0.0891, 0.2819)
8672 -- (-0.0389, 0.2629)
8673 -- (-0.0492, 0.2355)
8674 --cycle
8675 ;
8676 \path[hex/terrain/town/house,pic actions]
8677 ( 0.0828, 0.2371)
8678 -- ( 0.0883, 0.2659)
8679 -- ( 0.1411, 0.2559)
8680 -- ( 0.1357, 0.2271)
8681 --cycle
8682 ;
8683 \path[hex/terrain/town/house,pic actions]
8684 ( 0.0828, 0.2371)
8685 -- ( 0.0883, 0.2659)
8686 -- ( 0.1411, 0.2559)
8687 -- ( 0.1357, 0.2271)
8688 --cycle
8689 ;

```

```

8690 \path[hex/terrain/town/house,pic actions]
8691 (-0.1049, 0.1819)
8692 -- (-0.0945, 0.2094)
8693 -- (-0.0443, 0.1904)
8694 -- (-0.0546, 0.1629)
8695 --cycle
8696 ;
8697 \path[hex/terrain/town/house,pic actions]
8698 (-0.1049, 0.1819)
8699 -- (-0.0945, 0.2094)
8700 -- (-0.0443, 0.1904)
8701 -- (-0.0546, 0.1629)
8702 --cycle
8703 ;
8704 \path[hex/terrain/town/house,pic actions]
8705 (-0.0889,-0.0631)
8706 -- (-0.0785,-0.0357)
8707 -- (-0.0283,-0.0549)
8708 -- (-0.0388,-0.0823)
8709 --cycle
8710 ;
8711 \path[hex/terrain/town/house,pic actions]
8712 (-0.0889,-0.0631)
8713 -- (-0.0785,-0.0357)
8714 -- (-0.0283,-0.0549)
8715 -- (-0.0388,-0.0823)
8716 --cycle
8717 ;
8718 \path[hex/terrain/town/house,pic actions]
8719 (-0.2282,-0.7907)
8720 -- (-0.1823,-0.7907)
8721 -- (-0.1823,-0.8518)
8722 -- (-0.2282,-0.8518)
8723 --cycle
8724 ;
8725 \path[hex/terrain/town/house,pic actions]
8726 (-0.2282,-0.7907)
8727 -- (-0.1823,-0.7907)
8728 -- (-0.1823,-0.8518)
8729 -- (-0.2282,-0.8518)
8730 --cycle
8731 ;
8732 \path[hex/terrain/town/house,pic actions]
8733 ( 0.2275,-0.7989)
8734 -- ( 0.2734,-0.7989)
8735 -- ( 0.2734,-0.8599)
8736 -- ( 0.2275,-0.8599)
8737 --cycle
8738 ;
8739 \path[hex/terrain/town/house,pic actions]
8740 ( 0.2275,-0.7989)
8741 -- ( 0.2734,-0.7989)
8742 -- ( 0.2734,-0.8599)

```

```

8743 -- ( 0.2275,-0.8599)
8744 --cycle
8745 ;
8746 \path[hex/terrain/town/house,pic actions]
8747 ( 0.2516,-0.7126)
8748 -- ( 0.2808,-0.7126)
8749 -- ( 0.2808,-0.7663)
8750 -- ( 0.2516,-0.7663)
8751 --cycle
8752 ;
8753 \path[hex/terrain/town/house,pic actions]
8754 ( 0.2516,-0.7126)
8755 -- ( 0.2808,-0.7126)
8756 -- ( 0.2808,-0.7663)
8757 -- ( 0.2516,-0.7663)
8758 --cycle
8759 ;
8760 \path[hex/terrain/town/house,pic actions]
8761 ( 0.1669,-0.7129)
8762 -- ( 0.1954,-0.7199)
8763 -- ( 0.1826,-0.7721)
8764 -- ( 0.1542,-0.7650)
8765 --cycle
8766 ;
8767 \path[hex/terrain/town/house,pic actions]
8768 ( 0.1669,-0.7129)
8769 -- ( 0.1954,-0.7199)
8770 -- ( 0.1826,-0.7721)
8771 -- ( 0.1542,-0.7650)
8772 --cycle
8773 ;
8774 \path[hex/terrain/town/house,pic actions]
8775 ( 0.1222,-0.7854)
8776 -- ( 0.1514,-0.7854)
8777 -- ( 0.1514,-0.8390)
8778 -- ( 0.1222,-0.8390)
8779 --cycle
8780 ;
8781 \path[hex/terrain/town/house,pic actions]
8782 ( 0.1222,-0.7854)
8783 -- ( 0.1514,-0.7854)
8784 -- ( 0.1514,-0.8390)
8785 -- ( 0.1222,-0.8390)
8786 --cycle
8787 ;
8788 \path[hex/terrain/town/house,pic actions]
8789 ( 0.3031,-0.7156)
8790 -- ( 0.3325,-0.7156)
8791 -- ( 0.3325,-0.7693)
8792 -- ( 0.3031,-0.7693)
8793 --cycle
8794 ;
8795 \path[hex/terrain/town/house,pic actions]

```

```

8796 ( 0.3031,-0.7156)
8797 -- ( 0.3325,-0.7156)
8798 -- ( 0.3325,-0.7693)
8799 -- ( 0.3031,-0.7693)
8800 --cycle
8801 ;
8802 \path[hex/terrain/town/house,pic actions]
8803 ( 0.3574,-0.7174)
8804 -- ( 0.3867,-0.7174)
8805 -- ( 0.3867,-0.7712)
8806 -- ( 0.3574,-0.7712)
8807 --cycle
8808 ;
8809 \path[hex/terrain/town/house,pic actions]
8810 ( 0.3574,-0.7174)
8811 -- ( 0.3867,-0.7174)
8812 -- ( 0.3867,-0.7712)
8813 -- ( 0.3574,-0.7712)
8814 --cycle
8815 ;
8816 \path[hex/terrain/town/house,pic actions]
8817 ( 0.3742,-0.8016)
8818 -- ( 0.4036,-0.8016)
8819 -- ( 0.4036,-0.8554)
8820 -- ( 0.3742,-0.8554)
8821 --cycle
8822 ;
8823 \path[hex/terrain/town/house,pic actions]
8824 ( 0.3742,-0.8016)
8825 -- ( 0.4036,-0.8016)
8826 -- ( 0.4036,-0.8554)
8827 -- ( 0.3742,-0.8554)
8828 --cycle
8829 ;
8830 \path[hex/terrain/town/house,pic actions]
8831 ( 0.4107,-0.8072)
8832 -- ( 0.4400,-0.8072)
8833 -- ( 0.4400,-0.8610)
8834 -- ( 0.4107,-0.8610)
8835 --cycle
8836 ;
8837 \path[hex/terrain/town/house,pic actions]
8838 ( 0.4107,-0.8072)
8839 -- ( 0.4400,-0.8072)
8840 -- ( 0.4400,-0.8610)
8841 -- ( 0.4107,-0.8610)
8842 --cycle
8843 ;
8844 \path[hex/terrain/town/house,pic actions]
8845 ( 0.4612,-0.7886)
8846 -- ( 0.4905,-0.7886)
8847 -- ( 0.4905,-0.8423)
8848 -- ( 0.4612,-0.8423)

```

```

8849  --cycle
8850  ;
8851  \path[hex/terrain/town/house,pic actions]
8852  ( 0.4612,-0.7886)
8853  -- ( 0.4905,-0.7886)
8854  -- ( 0.4905,-0.8423)
8855  -- ( 0.4612,-0.8423)
8856  --cycle
8857  ;
8858  \path[hex/terrain/town/house,pic actions]
8859  ( 0.5733,-0.6570)
8860  -- ( 0.6007,-0.6675)
8861  -- ( 0.5814,-0.7176)
8862  -- ( 0.5540,-0.7071)
8863  --cycle
8864  ;
8865  \path[hex/terrain/town/house,pic actions]
8866  ( 0.5733,-0.6570)
8867  -- ( 0.6007,-0.6675)
8868  -- ( 0.5814,-0.7176)
8869  -- ( 0.5540,-0.7071)
8870  --cycle
8871  ;
8872  \path[hex/terrain/town/house,pic actions]
8873  ( 0.6698,-0.4454)
8874  -- ( 0.6958,-0.4589)
8875  -- ( 0.6710,-0.5065)
8876  -- ( 0.6450,-0.4930)
8877  --cycle
8878  ;
8879  \path[hex/terrain/town/house,pic actions]
8880  ( 0.6698,-0.4454)
8881  -- ( 0.6958,-0.4589)
8882  -- ( 0.6710,-0.5065)
8883  -- ( 0.6450,-0.4930)
8884  --cycle
8885  ;
8886  \path[hex/terrain/town/house,pic actions]
8887  ( 0.5789,-0.4658)
8888  -- ( 0.6009,-0.4851)
8889  -- ( 0.5654,-0.5254)
8890  -- ( 0.5434,-0.5061)
8891  --cycle
8892  ;
8893  \path[hex/terrain/town/house,pic actions]
8894  ( 0.5789,-0.4658)
8895  -- ( 0.6009,-0.4851)
8896  -- ( 0.5654,-0.5254)
8897  -- ( 0.5434,-0.5061)
8898  --cycle
8899  ;
8900  \path[hex/terrain/town/house,pic actions]
8901  ( 0.6025,-0.4876)

```

```

8902 -- ( 0.6259,-0.5054)
8903 -- ( 0.5934,-0.5481)
8904 -- ( 0.5701,-0.5304)
8905 --cycle
8906 ;
8907 \path[hex/terrain/town/house,pic actions]
8908 ( 0.6025,-0.4876)
8909 -- ( 0.6259,-0.5054)
8910 -- ( 0.5934,-0.5481)
8911 -- ( 0.5701,-0.5304)
8912 --cycle
8913 ;
8914 \path[hex/terrain/town/house,pic actions]
8915 ( 0.6466,-0.5044)
8916 -- ( 0.6729,-0.5172)
8917 -- ( 0.6493,-0.5654)
8918 -- ( 0.6230,-0.5526)
8919 --cycle
8920 ;
8921 \path[hex/terrain/town/house,pic actions]
8922 ( 0.6466,-0.5044)
8923 -- ( 0.6729,-0.5172)
8924 -- ( 0.6493,-0.5654)
8925 -- ( 0.6230,-0.5526)
8926 --cycle
8927 ;
8928 \path[hex/terrain/town/house,pic actions]
8929 ( 0.4854,-0.5939)
8930 -- ( 0.5002,-0.5686)
8931 -- ( 0.5466,-0.5955)
8932 -- ( 0.5320,-0.6208)
8933 --cycle
8934 ;
8935 \path[hex/terrain/town/house,pic actions]
8936 ( 0.4854,-0.5939)
8937 -- ( 0.5002,-0.5686)
8938 -- ( 0.5466,-0.5955)
8939 -- ( 0.5320,-0.6208)
8940 --cycle
8941 ;
8942 \path[hex/terrain/town/house,pic actions]
8943 ( 0.4577,-0.6299)
8944 -- ( 0.4750,-0.6063)
8945 -- ( 0.5183,-0.6380)
8946 -- ( 0.5010,-0.6617)
8947 --cycle
8948 ;
8949 \path[hex/terrain/town/house,pic actions]
8950 ( 0.4577,-0.6299)
8951 -- ( 0.4750,-0.6063)
8952 -- ( 0.5183,-0.6380)
8953 -- ( 0.5010,-0.6617)
8954 --cycle

```

```

8955 ;
8956 \path[hex/terrain/town/house,pic actions]
8957 ( 0.4354,-0.6506)
8958 -- ( 0.4568,-0.6305)
8959 -- ( 0.4935,-0.6697)
8960 -- ( 0.4721,-0.6898)
8961 --cycle
8962 ;
8963 \path[hex/terrain/town/house,pic actions]
8964 ( 0.4354,-0.6506)
8965 -- ( 0.4568,-0.6305)
8966 -- ( 0.4935,-0.6697)
8967 -- ( 0.4721,-0.6898)
8968 --cycle
8969 ;
8970 \path[hex/terrain/town/house,pic actions]
8971 ( 0.3580,-0.4631)
8972 -- ( 0.3837,-0.4771)
8973 -- ( 0.3581,-0.5243)
8974 -- ( 0.3323,-0.5103)
8975 --cycle
8976 ;
8977 \path[hex/terrain/town/house,pic actions]
8978 ( 0.3580,-0.4631)
8979 -- ( 0.3837,-0.4771)
8980 -- ( 0.3581,-0.5243)
8981 -- ( 0.3323,-0.5103)
8982 --cycle
8983 ;
8984 \path[hex/terrain/town/house,pic actions]
8985 ( 0.5131,-0.3580)
8986 -- ( 0.5345,-0.3780)
8987 -- ( 0.4978,-0.4172)
8988 -- ( 0.4763,-0.3972)
8989 --cycle
8990 ;
8991 \path[hex/terrain/town/house,pic actions]
8992 ( 0.5131,-0.3580)
8993 -- ( 0.5345,-0.3780)
8994 -- ( 0.4978,-0.4172)
8995 -- ( 0.4763,-0.3972)
8996 --cycle
8997 ;
8998 \path[hex/terrain/town/house,pic actions]
8999 ( 0.2116,-0.3904)
9000 -- ( 0.2243,-0.3641)
9001 -- ( 0.2726,-0.3875)
9002 -- ( 0.2598,-0.4139)
9003 --cycle
9004 ;
9005 \path[hex/terrain/town/house,pic actions]
9006 ( 0.2116,-0.3904)
9007 -- ( 0.2243,-0.3641)

```

```

9008 -- ( 0.2726,-0.3875)
9009 -- ( 0.2598,-0.4139)
9010 --cycle
9011 ;
9012 \path[hex/terrain/town/house,pic actions]
9013 ( 0.1786,-0.4343)
9014 -- ( 0.1889,-0.4069)
9015 -- ( 0.2391,-0.4259)
9016 -- ( 0.2289,-0.4532)
9017 --cycle
9018 ;
9019 \path[hex/terrain/town/house,pic actions]
9020 ( 0.1786,-0.4343)
9021 -- ( 0.1889,-0.4069)
9022 -- ( 0.2391,-0.4259)
9023 -- ( 0.2289,-0.4532)
9024 --cycle
9025 ;
9026 \path[hex/terrain/town/house,pic actions]
9027 ( 0.1647,-0.4763)
9028 -- ( 0.1772,-0.4497)
9029 -- ( 0.2258,-0.4725)
9030 -- ( 0.2134,-0.4990)
9031 --cycle
9032 ;
9033 \path[hex/terrain/town/house,pic actions]
9034 ( 0.1647,-0.4763)
9035 -- ( 0.1772,-0.4497)
9036 -- ( 0.2258,-0.4725)
9037 -- ( 0.2134,-0.4990)
9038 --cycle
9039 ;
9040 \path[hex/terrain/town/house,pic actions]
9041 ( 0.2335,-0.5197)
9042 -- ( 0.2460,-0.4932)
9043 -- ( 0.2946,-0.5160)
9044 -- ( 0.2821,-0.5425)
9045 --cycle
9046 ;
9047 \path[hex/terrain/town/house,pic actions]
9048 ( 0.2335,-0.5197)
9049 -- ( 0.2460,-0.4932)
9050 -- ( 0.2946,-0.5160)
9051 -- ( 0.2821,-0.5425)
9052 --cycle
9053 ;
9054 \path[hex/terrain/town/house,pic actions]
9055 ( 0.2832,-0.4218)
9056 -- ( 0.2956,-0.3952)
9057 -- ( 0.3443,-0.4180)
9058 -- ( 0.3318,-0.4445)
9059 --cycle
9060 ;

```

```

9061 \path[hex/terrain/town/house,pic actions]
9062 ( 0.2832,-0.4218)
9063 -- ( 0.2956,-0.3952)
9064 -- ( 0.3443,-0.4180)
9065 -- ( 0.3318,-0.4445)
9066 --cycle
9067 ;
9068 \path[hex/terrain/town/house,pic actions]
9069 ( 0.2064,-0.6136)
9070 -- ( 0.2189,-0.5871)
9071 -- ( 0.2675,-0.6099)
9072 -- ( 0.2551,-0.6364)
9073 --cycle
9074 ;
9075 \path[hex/terrain/town/house,pic actions]
9076 ( 0.2064,-0.6136)
9077 -- ( 0.2189,-0.5871)
9078 -- ( 0.2675,-0.6099)
9079 -- ( 0.2551,-0.6364)
9080 --cycle
9081 ;
9082 \path[hex/terrain/town/house,pic actions]
9083 ( 0.1443,-0.5195)
9084 -- ( 0.1550,-0.4922)
9085 -- ( 0.2050,-0.5120)
9086 -- ( 0.1942,-0.5392)
9087 --cycle
9088 ;
9089 \path[hex/terrain/town/house,pic actions]
9090 ( 0.1443,-0.5195)
9091 -- ( 0.1550,-0.4922)
9092 -- ( 0.2050,-0.5120)
9093 -- ( 0.1942,-0.5392)
9094 --cycle
9095 ;
9096 \path[hex/terrain/town/house,pic actions]
9097 ( 0.3128,-0.5333)
9098 -- ( 0.3394,-0.5455)
9099 -- ( 0.3173,-0.5943)
9100 -- ( 0.2906,-0.5823)
9101 --cycle
9102 ;
9103 \path[hex/terrain/town/house,pic actions]
9104 ( 0.3128,-0.5333)
9105 -- ( 0.3394,-0.5455)
9106 -- ( 0.3173,-0.5943)
9107 -- ( 0.2906,-0.5823)
9108 --cycle
9109 ;
9110 \path[hex/terrain/town/house,pic actions]
9111 ( 0.1781,-0.6526)
9112 -- ( 0.1883,-0.6250)
9113 -- ( 0.2386,-0.6435)

```

```

9114 -- ( 0.2286,-0.6710)
9115 --cycle
9116 ;
9117 \path[hex/terrain/town/house,pic actions]
9118 ( 0.1781,-0.6526)
9119 -- ( 0.1883,-0.6250)
9120 -- ( 0.2386,-0.6435)
9121 -- ( 0.2286,-0.6710)
9122 --cycle
9123 ;
9124 \path[hex/terrain/town/house,pic actions]
9125 ( 0.0147,-0.5695)
9126 -- ( 0.0238,-0.5417)
9127 -- ( 0.0749,-0.5582)
9128 -- ( 0.0658,-0.5861)
9129 --cycle
9130 ;
9131 \path[hex/terrain/town/house,pic actions]
9132 ( 0.0147,-0.5695)
9133 -- ( 0.0238,-0.5417)
9134 -- ( 0.0749,-0.5582)
9135 -- ( 0.0658,-0.5861)
9136 --cycle
9137 ;
9138 \path[hex/terrain/town/house,pic actions]
9139 ( 0.0205,-0.5124)
9140 -- ( 0.0287,-0.4843)
9141 -- ( 0.0803,-0.4994)
9142 -- ( 0.0720,-0.5275)
9143 --cycle
9144 ;
9145 \path[hex/terrain/town/house,pic actions]
9146 ( 0.0205,-0.5124)
9147 -- ( 0.0287,-0.4843)
9148 -- ( 0.0803,-0.4994)
9149 -- ( 0.0720,-0.5275)
9150 --cycle
9151 ;
9152 \path[hex/terrain/town/house,pic actions]
9153 (-0.0719,-0.6560)
9154 -- (-0.0678,-0.6849)
9155 -- (-0.1209,-0.6925)
9156 -- (-0.1250,-0.6635)
9157 --cycle
9158 ;
9159 \path[hex/terrain/town/house,pic actions]
9160 (-0.0719,-0.6560)
9161 -- (-0.0678,-0.6849)
9162 -- (-0.1209,-0.6925)
9163 -- (-0.1250,-0.6635)
9164 --cycle
9165 ;
9166 \path[hex/terrain/town/house,pic actions]

```

```

9167      (-0.1330,-0.6411)
9168      -- (-0.1375,-0.6700)
9169      -- (-0.1906,-0.6618)
9170      -- (-0.1861,-0.6329)
9171      --cycle
9172      ;
9173      \path[hex/terrain/town/house,pic actions]
9174      (-0.1330,-0.6411)
9175      -- (-0.1375,-0.6700)
9176      -- (-0.1906,-0.6618)
9177      -- (-0.1861,-0.6329)
9178      --cycle
9179      ;
9180      \path[hex/terrain/town/house,pic actions]
9181      (-0.0334,-0.7381)
9182      -- (-0.0042,-0.7381)
9183      -- (-0.0042,-0.7917)
9184      -- (-0.0334,-0.7917)
9185      --cycle
9186      ;
9187      \path[hex/terrain/town/house,pic actions]
9188      (-0.0334,-0.7381)
9189      -- (-0.0042,-0.7381)
9190      -- (-0.0042,-0.7917)
9191      -- (-0.0334,-0.7917)
9192      --cycle
9193      ;
9194      \path[hex/terrain/town/house,pic actions]
9195      (-0.0998,-0.7315)
9196      -- (-0.0706,-0.7315)
9197      -- (-0.0706,-0.7852)
9198      -- (-0.0998,-0.7852)
9199      --cycle
9200      ;
9201      \path[hex/terrain/town/house,pic actions]
9202      (-0.0998,-0.7315)
9203      -- (-0.0706,-0.7315)
9204      -- (-0.0706,-0.7852)
9205      -- (-0.0998,-0.7852)
9206      --cycle
9207      ;
9208      \path[hex/terrain/town/house,pic actions]
9209      (-0.2018,-0.7234)
9210      -- (-0.1730,-0.7180)
9211      -- (-0.1631,-0.7708)
9212      -- (-0.1919,-0.7762)
9213      --cycle
9214      ;
9215      \path[hex/terrain/town/house,pic actions]
9216      (-0.2018,-0.7234)
9217      -- (-0.1730,-0.7180)
9218      -- (-0.1631,-0.7708)
9219      -- (-0.1919,-0.7762)

```

```

9220 --cycle
9221 ;
9222 \path[hex/terrain/town/house,pic actions]
9223 (-0.2956,-0.7184)
9224 -- (-0.2667,-0.7229)
9225 -- (-0.2750,-0.7760)
9226 -- (-0.3039,-0.7714)
9227 --cycle
9228 ;
9229 \path[hex/terrain/town/house,pic actions]
9230 (-0.2956,-0.7184)
9231 -- (-0.2667,-0.7229)
9232 -- (-0.2750,-0.7760)
9233 -- (-0.3039,-0.7714)
9234 --cycle
9235 ;
9236 \path[hex/terrain/town/house,pic actions]
9237 (-0.1661,-0.8014)
9238 -- (-0.1372,-0.8060)
9239 -- (-0.1454,-0.8590)
9240 -- (-0.1744,-0.8545)
9241 --cycle
9242 ;
9243 \path[hex/terrain/town/house,pic actions]
9244 (-0.1661,-0.8014)
9245 -- (-0.1372,-0.8060)
9246 -- (-0.1454,-0.8590)
9247 -- (-0.1744,-0.8545)
9248 --cycle
9249 ;
9250 \path[hex/terrain/town/house,pic actions]
9251 (-0.1269,-0.8074)
9252 -- (-0.0977,-0.8054)
9253 -- (-0.0940,-0.8590)
9254 -- (-0.1232,-0.8610)
9255 --cycle
9256 ;
9257 \path[hex/terrain/town/house,pic actions]
9258 (-0.1269,-0.8074)
9259 -- (-0.0977,-0.8054)
9260 -- (-0.0940,-0.8590)
9261 -- (-0.1232,-0.8610)
9262 --cycle
9263 ;
9264 \path[hex/terrain/town/house,pic actions]
9265 (-0.2787,-0.7975)
9266 -- (-0.2495,-0.7956)
9267 -- (-0.2459,-0.8492)
9268 -- (-0.2751,-0.8511)
9269 --cycle
9270 ;
9271 \path[hex/terrain/town/house,pic actions]
9272 (-0.2787,-0.7975)

```

```

9273  -- (-0.2495,-0.7956)
9274  -- (-0.2459,-0.8492)
9275  -- (-0.2751,-0.8511)
9276  --cycle
9277  ;
9278  \path[hex/terrain/town/house,pic actions]
9279  (-0.3966,-0.5592)
9280  -- (-0.3802,-0.5834)
9281  -- (-0.4246,-0.6135)
9282  -- (-0.4411,-0.5892)
9283  --cycle
9284  ;
9285  \path[hex/terrain/town/house,pic actions]
9286  (-0.3966,-0.5592)
9287  -- (-0.3802,-0.5834)
9288  -- (-0.4246,-0.6135)
9289  -- (-0.4411,-0.5892)
9290  --cycle
9291  ;
9292  \path[hex/terrain/town/house,pic actions]
9293  (-0.4189,-0.5000)
9294  -- (-0.4033,-0.5248)
9295  -- (-0.4488,-0.5534)
9296  -- (-0.4644,-0.5286)
9297  --cycle
9298  ;
9299  \path[hex/terrain/town/house,pic actions]
9300  (-0.4189,-0.5000)
9301  -- (-0.4033,-0.5248)
9302  -- (-0.4488,-0.5534)
9303  -- (-0.4644,-0.5286)
9304  --cycle
9305  ;
9306  \path[hex/terrain/town/house,pic actions]
9307  (-0.3561,-0.4332)
9308  -- (-0.3310,-0.4483)
9309  -- (-0.3586,-0.4944)
9310  -- (-0.3837,-0.4793)
9311  --cycle
9312  ;
9313  \path[hex/terrain/town/house,pic actions]
9314  (-0.3561,-0.4332)
9315  -- (-0.3310,-0.4483)
9316  -- (-0.3586,-0.4944)
9317  -- (-0.3837,-0.4793)
9318  --cycle
9319  ;
9320  \path[hex/terrain/town/house,pic actions]
9321  (-0.3120,-0.4787)
9322  -- (-0.2896,-0.4976)
9323  -- (-0.3241,-0.5386)
9324  -- (-0.3466,-0.5198)
9325  --cycle

```

```

9326 ;
9327 \path[hex/terrain/town/house,pic actions]
9328 (-0.3120,-0.4787)
9329 -- (-0.2896,-0.4976)
9330 -- (-0.3241,-0.5386)
9331 -- (-0.3466,-0.5198)
9332 --cycle
9333 ;
9334 \path[hex/terrain/town/house,pic actions]
9335 (-0.2660,-0.5113)
9336 -- (-0.2456,-0.5323)
9337 -- (-0.2840,-0.5697)
9338 -- (-0.3045,-0.5487)
9339 --cycle
9340 ;
9341 \path[hex/terrain/town/house,pic actions]
9342 (-0.2660,-0.5113)
9343 -- (-0.2456,-0.5323)
9344 -- (-0.2840,-0.5697)
9345 -- (-0.3045,-0.5487)
9346 --cycle
9347 ;
9348 \path[hex/terrain/town/house,pic actions]
9349 (-0.3939,-0.2212)
9350 -- (-0.3666,-0.2319)
9351 -- (-0.3863,-0.2819)
9352 -- (-0.4135,-0.2712)
9353 --cycle
9354 ;
9355 \path[hex/terrain/town/house,pic actions]
9356 (-0.3939,-0.2212)
9357 -- (-0.3666,-0.2319)
9358 -- (-0.3863,-0.2819)
9359 -- (-0.4135,-0.2712)
9360 --cycle
9361 ;
9362 \path[hex/terrain/town/house,pic actions]
9363 (-0.3038,-0.2403)
9364 -- (-0.2765,-0.2509)
9365 -- (-0.2961,-0.3010)
9366 -- (-0.3234,-0.2902)
9367 --cycle
9368 ;
9369 \path[hex/terrain/town/house,pic actions]
9370 (-0.3038,-0.2403)
9371 -- (-0.2765,-0.2509)
9372 -- (-0.2961,-0.3010)
9373 -- (-0.3234,-0.2902)
9374 --cycle
9375 ;
9376 \path[hex/terrain/town/house,pic actions]
9377 (-0.3532,-0.2251)
9378 -- (-0.3255,-0.2346)

```

```

9379  -- (-0.3428,-0.2854)
9380  -- (-0.3705,-0.2760)
9381  --cycle
9382  ;
9383  \path[hex/terrain/town/house,pic actions]
9384  (-0.3532,-0.2251)
9385  -- (-0.3255,-0.2346)
9386  -- (-0.3428,-0.2854)
9387  -- (-0.3705,-0.2760)
9388  --cycle
9389  ;
9390  \path[hex/terrain/town/house,pic actions]
9391  (-0.3482,-0.3198)
9392  -- (-0.3204,-0.3293)
9393  -- (-0.3377,-0.3801)
9394  -- (-0.3655,-0.3706)
9395  --cycle
9396  ;
9397  \path[hex/terrain/town/house,pic actions]
9398  (-0.3482,-0.3198)
9399  -- (-0.3204,-0.3293)
9400  -- (-0.3377,-0.3801)
9401  -- (-0.3655,-0.3706)
9402  --cycle
9403  ;
9404  \path[hex/terrain/town/house,pic actions]
9405  (-0.5006,-0.1767)
9406  -- (-0.4737,-0.1885)
9407  -- (-0.4953,-0.2376)
9408  -- (-0.5221,-0.2258)
9409  --cycle
9410  ;
9411  \path[hex/terrain/town/house,pic actions]
9412  (-0.5006,-0.1767)
9413  -- (-0.4737,-0.1885)
9414  -- (-0.4953,-0.2376)
9415  -- (-0.5221,-0.2258)
9416  --cycle
9417  ;
9418  \path[hex/terrain/town/house,pic actions]
9419  (-0.5739,-0.2312)
9420  -- (-0.5595,-0.2568)
9421  -- (-0.6065,-0.2830)
9422  -- (-0.6207,-0.2575)
9423  --cycle
9424  ;
9425  \path[hex/terrain/town/house,pic actions]
9426  (-0.5739,-0.2312)
9427  -- (-0.5595,-0.2568)
9428  -- (-0.6065,-0.2830)
9429  -- (-0.6207,-0.2575)
9430  --cycle
9431  ;

```

```

9432 \path[hex/terrain/town/house,pic actions]
9433 (-0.5929,-0.3943)
9434 -- (-0.5696,-0.3765)
9435 -- (-0.5369,-0.4192)
9436 -- (-0.5602,-0.4370)
9437 --cycle
9438 ;
9439 \path[hex/terrain/town/house,pic actions]
9440 (-0.5929,-0.3943)
9441 -- (-0.5696,-0.3765)
9442 -- (-0.5369,-0.4192)
9443 -- (-0.5602,-0.4370)
9444 --cycle
9445 ;
9446 \path[hex/terrain/town/house,pic actions]
9447 (-0.5005,-0.3312)
9448 -- (-0.4775,-0.3129)
9449 -- (-0.4441,-0.3550)
9450 -- (-0.4670,-0.3733)
9451 --cycle
9452 ;
9453 \path[hex/terrain/town/house,pic actions]
9454 (-0.5005,-0.3312)
9455 -- (-0.4775,-0.3129)
9456 -- (-0.4441,-0.3550)
9457 -- (-0.4670,-0.3733)
9458 --cycle
9459 ;
9460 \path[hex/terrain/town/house,pic actions]
9461 (-0.5523,-0.3618)
9462 -- (-0.5293,-0.3436)
9463 -- (-0.4960,-0.3857)
9464 -- (-0.5189,-0.4038)
9465 --cycle
9466 ;
9467 \path[hex/terrain/town/house,pic actions]
9468 (-0.5523,-0.3618)
9469 -- (-0.5293,-0.3436)
9470 -- (-0.4960,-0.3857)
9471 -- (-0.5189,-0.4038)
9472 --cycle
9473 ;
9474 \path[hex/terrain/town/house,pic actions]
9475 (-0.4383,-0.3880)
9476 -- (-0.4249,-0.4140)
9477 -- (-0.4726,-0.4386)
9478 -- (-0.4861,-0.4126)
9479 --cycle
9480 ;
9481 \path[hex/terrain/town/house,pic actions]
9482 (-0.4383,-0.3880)
9483 -- (-0.4249,-0.4140)
9484 -- (-0.4726,-0.4386)

```

```

9485 -- (-0.4861,-0.4126)
9486 --cycle
9487 ;
9488 \path[hex/terrain/town/house,pic actions]
9489 (-0.6626,-0.4293)
9490 -- (-0.6510,-0.4562)
9491 -- (-0.7003,-0.4775)
9492 -- (-0.7119,-0.4506)
9493 --cycle
9494 ;
9495 \path[hex/terrain/town/house,pic actions]
9496 (-0.6626,-0.4293)
9497 -- (-0.6510,-0.4562)
9498 -- (-0.7003,-0.4775)
9499 -- (-0.7119,-0.4506)
9500 --cycle
9501 ;
9502 \path[hex/terrain/town/house,pic actions]
9503 (-0.6449,-0.4759)
9504 -- (-0.6280,-0.4998)
9505 -- (-0.6717,-0.5309)
9506 -- (-0.6887,-0.5069)
9507 --cycle
9508 ;
9509 \path[hex/terrain/town/house,pic actions]
9510 (-0.6449,-0.4759)
9511 -- (-0.6280,-0.4998)
9512 -- (-0.6717,-0.5309)
9513 -- (-0.6887,-0.5069)
9514 --cycle
9515 ;
9516 \path[hex/terrain/town/house,pic actions]
9517 (-0.5766,-0.5683)
9518 -- (-0.5643,-0.5948)
9519 -- (-0.6130,-0.6174)
9520 -- (-0.6254,-0.5909)
9521 --cycle
9522 ;
9523 \path[hex/terrain/town/house,pic actions]
9524 (-0.5766,-0.5683)
9525 -- (-0.5643,-0.5948)
9526 -- (-0.6130,-0.6174)
9527 -- (-0.6254,-0.5909)
9528 --cycle
9529 ;
9530 \path[hex/terrain/town/house,pic actions]
9531 (-0.4733,-0.5728)
9532 -- (-0.4590,-0.5983)
9533 -- (-0.5061,-0.6244)
9534 -- (-0.5202,-0.5988)
9535 --cycle
9536 ;
9537 \path[hex/terrain/town/house,pic actions]

```

```

9538      (-0.4733,-0.5728)
9539      -- (-0.4590,-0.5983)
9540      -- (-0.5061,-0.6244)
9541      -- (-0.5202,-0.5988)
9542      --cycle
9543      ;
9544      \path[hex/terrain/town/house,pic actions]
9545      (-0.4272,-0.6520)
9546      -- (-0.4128,-0.6774)
9547      -- (-0.4595,-0.7039)
9548      -- (-0.4740,-0.6785)
9549      --cycle
9550      ;
9551      \path[hex/terrain/town/house,pic actions]
9552      (-0.4272,-0.6520)
9553      -- (-0.4128,-0.6774)
9554      -- (-0.4595,-0.7039)
9555      -- (-0.4740,-0.6785)
9556      --cycle
9557      ;
9558      \path[hex/terrain/town/house,pic actions]
9559      (-0.5374,-0.6782)
9560      -- (-0.5236,-0.7040)
9561      -- (-0.5710,-0.7292)
9562      -- (-0.5848,-0.7034)
9563      --cycle
9564      ;
9565      \path[hex/terrain/town/house,pic actions]
9566      (-0.5374,-0.6782)
9567      -- (-0.5236,-0.7040)
9568      -- (-0.5710,-0.7292)
9569      -- (-0.5848,-0.7034)
9570      --cycle
9571      ;
9572      \path[hex/terrain/town/house,pic actions]
9573      (-0.5214,-0.7131)
9574      -- (-0.5038,-0.7365)
9575      -- (-0.5468,-0.7687)
9576      -- (-0.5644,-0.7453)
9577      --cycle
9578      ;
9579      \path[hex/terrain/town/house,pic actions]
9580      (-0.5214,-0.7131)
9581      -- (-0.5038,-0.7365)
9582      -- (-0.5468,-0.7687)
9583      -- (-0.5644,-0.7453)
9584      --cycle
9585      ;
9586      \path[hex/terrain/town/house,pic actions]
9587      ( 0.2847,-0.1917)
9588      -- ( 0.2954,-0.1644)
9589      -- ( 0.3454,-0.1841)
9590      -- ( 0.3347,-0.2114)

```

```

9591 --cycle
9592 ;
9593 \path[hex/terrain/town/house,pic actions]
9594 ( 0.2847,-0.1917)
9595 -- ( 0.2954,-0.1644)
9596 -- ( 0.3454,-0.1841)
9597 -- ( 0.3347,-0.2114)
9598 --cycle
9599 ;
9600 \path[hex/terrain/town/house,pic actions]
9601 ( 0.2692,-0.2397)
9602 -- ( 0.2775,-0.2116)
9603 -- ( 0.3291,-0.2268)
9604 -- ( 0.3208,-0.2548)
9605 --cycle
9606 ;
9607 \path[hex/terrain/town/house,pic actions]
9608 ( 0.2692,-0.2397)
9609 -- ( 0.2775,-0.2116)
9610 -- ( 0.3291,-0.2268)
9611 -- ( 0.3208,-0.2548)
9612 --cycle
9613 ;
9614 \path[hex/terrain/town/house,pic actions]
9615 ( 0.2587,-0.2944)
9616 -- ( 0.2585,-0.2651)
9617 -- ( 0.3123,-0.2648)
9618 -- ( 0.3125,-0.2941)
9619 --cycle
9620 ;
9621 \path[hex/terrain/town/house,pic actions]
9622 ( 0.2587,-0.2944)
9623 -- ( 0.2585,-0.2651)
9624 -- ( 0.3123,-0.2648)
9625 -- ( 0.3125,-0.2941)
9626 --cycle
9627 ;
9628 \path[hex/terrain/town/house,pic actions]
9629 ( 0.1269,-0.2581)
9630 -- ( 0.1359,-0.2303)
9631 -- ( 0.1871,-0.2468)
9632 -- ( 0.1780,-0.2746)
9633 --cycle
9634 ;
9635 \path[hex/terrain/town/house,pic actions]
9636 ( 0.1269,-0.2581)
9637 -- ( 0.1359,-0.2303)
9638 -- ( 0.1871,-0.2468)
9639 -- ( 0.1780,-0.2746)
9640 --cycle
9641 ;
9642 \path[hex/terrain/town/house,pic actions]
9643 ( 0.1127,-0.3153)

```

```

9644 -- ( 0.1232,-0.2880)
9645 -- ( 0.1733,-0.3074)
9646 -- ( 0.1626,-0.3348)
9647 --cycle
9648 ;
9649 \path[hex/terrain/town/house,pic actions]
9650 ( 0.1127,-0.3153)
9651 -- ( 0.1232,-0.2880)
9652 -- ( 0.1733,-0.3074)
9653 -- ( 0.1626,-0.3348)
9654 --cycle
9655 ;
9656 \path[hex/terrain/town/house,pic actions]
9657 ( 0.1928,-0.0951)
9658 -- ( 0.2055,-0.0687)
9659 -- ( 0.2539,-0.0920)
9660 -- ( 0.2412,-0.1184)
9661 --cycle
9662 ;
9663 \path[hex/terrain/town/house,pic actions]
9664 ( 0.1928,-0.0951)
9665 -- ( 0.2055,-0.0687)
9666 -- ( 0.2539,-0.0920)
9667 -- ( 0.2412,-0.1184)
9668 --cycle
9669 ;
9670 \path[hex/terrain/town/house,pic actions]
9671 ( 0.2202,-0.0375)
9672 -- ( 0.2335,-0.0113)
9673 -- ( 0.2814,-0.0356)
9674 -- ( 0.2682,-0.0617)
9675 --cycle
9676 ;
9677 \path[hex/terrain/town/house,pic actions]
9678 ( 0.2202,-0.0375)
9679 -- ( 0.2335,-0.0113)
9680 -- ( 0.2814,-0.0356)
9681 -- ( 0.2682,-0.0617)
9682 --cycle
9683 ;
9684 \path[hex/terrain/town/house,pic actions]
9685 ( 0.2582, 0.0509)
9686 -- ( 0.2736, 0.0259)
9687 -- ( 0.2278,-0.0022)
9688 -- ( 0.2125, 0.0227)
9689 --cycle
9690 ;
9691 \path[hex/terrain/town/house,pic actions]
9692 ( 0.2582, 0.0509)
9693 -- ( 0.2736, 0.0259)
9694 -- ( 0.2278,-0.0022)
9695 -- ( 0.2125, 0.0227)
9696 --cycle

```

```

9697 ;
9698 \path[hex/terrain/town/house,pic actions]
9699 ( 0.2111, 0.0849)
9700 -- ( 0.2307, 0.0632)
9701 -- ( 0.1908, 0.0273)
9702 -- ( 0.1712, 0.0490)
9703 --cycle
9704 ;
9705 \path[hex/terrain/town/house,pic actions]
9706 ( 0.2111, 0.0849)
9707 -- ( 0.2307, 0.0632)
9708 -- ( 0.1908, 0.0273)
9709 -- ( 0.1712, 0.0490)
9710 --cycle
9711 ;
9712 \path[hex/terrain/town/house,pic actions]
9713 ( 0.1776, 0.1187)
9714 -- ( 0.1982, 0.0978)
9715 -- ( 0.1599, 0.0601)
9716 -- ( 0.1394, 0.0810)
9717 --cycle
9718 ;
9719 \path[hex/terrain/town/house,pic actions]
9720 ( 0.1776, 0.1187)
9721 -- ( 0.1982, 0.0978)
9722 -- ( 0.1599, 0.0601)
9723 -- ( 0.1394, 0.0810)
9724 --cycle
9725 ;
9726 \path[hex/terrain/town/house,pic actions]
9727 ( 0.2760, 0.3987)
9728 -- ( 0.2946, 0.3760)
9729 -- ( 0.2531, 0.3420)
9730 -- ( 0.2345, 0.3646)
9731 --cycle
9732 ;
9733 \path[hex/terrain/town/house,pic actions]
9734 ( 0.2760, 0.3987)
9735 -- ( 0.2946, 0.3760)
9736 -- ( 0.2531, 0.3420)
9737 -- ( 0.2345, 0.3646)
9738 --cycle
9739 ;
9740 \path[hex/terrain/town/house,pic actions]
9741 ( 0.3226, 0.3543)
9742 -- ( 0.3420, 0.3323)
9743 -- ( 0.3018, 0.2967)
9744 -- ( 0.2824, 0.3185)
9745 --cycle
9746 ;
9747 \path[hex/terrain/town/house,pic actions]
9748 ( 0.3226, 0.3543)
9749 -- ( 0.3420, 0.3323)

```

```

9750 -- ( 0.3018, 0.2967)
9751 -- ( 0.2824, 0.3185)
9752 --cycle
9753 ;
9754 \path[hex/terrain/town/house,pic actions]
9755 (-0.2277, 0.3599)
9756 -- (-0.2171, 0.3872)
9757 -- (-0.1671, 0.3676)
9758 -- (-0.1777, 0.3404)
9759 --cycle
9760 ;
9761 \path[hex/terrain/town/house,pic actions]
9762 (-0.2277, 0.3599)
9763 -- (-0.2171, 0.3872)
9764 -- (-0.1671, 0.3676)
9765 -- (-0.1777, 0.3404)
9766 --cycle
9767 ;
9768 \path[hex/terrain/town/house,pic actions]
9769 (-0.1722, 0.5368)
9770 -- (-0.1616, 0.5642)
9771 -- (-0.1116, 0.5446)
9772 -- (-0.1223, 0.5174)
9773 --cycle
9774 ;
9775 \path[hex/terrain/town/house,pic actions]
9776 (-0.1722, 0.5368)
9777 -- (-0.1616, 0.5642)
9778 -- (-0.1116, 0.5446)
9779 -- (-0.1223, 0.5174)
9780 --cycle
9781 ;
9782 \path[hex/terrain/town/house,pic actions]
9783 (-0.2400, 0.3081)
9784 -- (-0.2307, 0.3359)
9785 -- (-0.1797, 0.3189)
9786 -- (-0.1890, 0.2912)
9787 --cycle
9788 ;
9789 \path[hex/terrain/town/house,pic actions]
9790 (-0.2400, 0.3081)
9791 -- (-0.2307, 0.3359)
9792 -- (-0.1797, 0.3189)
9793 -- (-0.1890, 0.2912)
9794 --cycle
9795 ;
9796 \path[hex/terrain/town/house,pic actions]
9797 (-0.2735, 0.1997)
9798 -- (-0.2631, 0.2270)
9799 -- (-0.2129, 0.2080)
9800 -- (-0.2233, 0.1807)
9801 --cycle
9802 ;

```

```

9803 \path[hex/terrain/town/house,pic actions]
9804 (-0.2735, 0.1997)
9805 -- (-0.2631, 0.2270)
9806 -- (-0.2129, 0.2080)
9807 -- (-0.2233, 0.1807)
9808 --cycle
9809 ;
9810 \path[hex/terrain/town/house,pic actions]
9811 (-0.3047, 0.1045)
9812 -- (-0.2975, 0.1329)
9813 -- (-0.2455, 0.1200)
9814 -- (-0.2525, 0.0915)
9815 --cycle
9816 ;
9817 \path[hex/terrain/town/house,pic actions]
9818 (-0.3047, 0.1045)
9819 -- (-0.2975, 0.1329)
9820 -- (-0.2455, 0.1200)
9821 -- (-0.2525, 0.0915)
9822 --cycle
9823 ;
9824 \path[hex/terrain/town/house,pic actions]
9825 (-0.1406, 0.3596)
9826 -- (-0.1136, 0.3482)
9827 -- (-0.1345, 0.2988)
9828 -- (-0.1615, 0.3102)
9829 --cycle
9830 ;
9831 \path[hex/terrain/town/house,pic actions]
9832 (-0.1406, 0.3596)
9833 -- (-0.1136, 0.3482)
9834 -- (-0.1345, 0.2988)
9835 -- (-0.1615, 0.3102)
9836 --cycle
9837 ;
9838 \path[hex/terrain/town/house,pic actions]
9839 (-0.0597, 0.5878)
9840 -- (-0.0327, 0.5763)
9841 -- (-0.0536, 0.5269)
9842 -- (-0.0806, 0.5383)
9843 --cycle
9844 ;
9845 \path[hex/terrain/town/house,pic actions]
9846 (-0.0597, 0.5878)
9847 -- (-0.0327, 0.5763)
9848 -- (-0.0536, 0.5269)
9849 -- (-0.0806, 0.5383)
9850 --cycle
9851 ;
9852 \path[hex/terrain/town/house,pic actions]
9853 (-0.0206, 0.5864)
9854 -- ( 0.0064, 0.5749)
9855 -- (-0.0146, 0.5255)

```

```

9856 -- (-0.0416, 0.5369)
9857 --cycle
9858 ;
9859 \path[hex/terrain/town/house,pic actions]
9860 (-0.0206, 0.5864)
9861 -- ( 0.0064, 0.5749)
9862 -- (-0.0146, 0.5255)
9863 -- (-0.0416, 0.5369)
9864 --cycle
9865 ;
9866 \path[hex/terrain/town/house,pic actions]
9867 (-0.1653, 0.2738)
9868 -- (-0.1360, 0.2738)
9869 -- (-0.1360, 0.2200)
9870 -- (-0.1653, 0.2200)
9871 --cycle
9872 ;
9873 \path[hex/terrain/town/house,pic actions]
9874 (-0.1653, 0.2738)
9875 -- (-0.1360, 0.2738)
9876 -- (-0.1360, 0.2200)
9877 -- (-0.1653, 0.2200)
9878 --cycle
9879 ;
9880 \path[hex/terrain/town/house,pic actions]
9881 (-0.1782, 0.2207)
9882 -- (-0.1501, 0.2122)
9883 -- (-0.1657, 0.1608)
9884 -- (-0.1937, 0.1693)
9885 --cycle
9886 ;
9887 \path[hex/terrain/town/house,pic actions]
9888 (-0.1782, 0.2207)
9889 -- (-0.1501, 0.2122)
9890 -- (-0.1657, 0.1608)
9891 -- (-0.1937, 0.1693)
9892 --cycle
9893 ;
9894 \path[hex/terrain/town/house,pic actions]
9895 (-0.2343, 0.0622)
9896 -- (-0.2239, 0.0896)
9897 -- (-0.1737, 0.0706)
9898 -- (-0.1840, 0.0432)
9899 --cycle
9900 ;
9901 \path[hex/terrain/town/house,pic actions]
9902 (-0.2343, 0.0622)
9903 -- (-0.2239, 0.0896)
9904 -- (-0.1737, 0.0706)
9905 -- (-0.1840, 0.0432)
9906 --cycle
9907 ;
9908 \path[hex/terrain/town/house,pic actions]

```

```

9909      (-0.1289, 0.0933)
9910      -- (-0.1186, 0.1207)
9911      -- (-0.0683, 0.1017)
9912      -- (-0.0787, 0.0743)
9913      --cycle
9914      ;
9915      \path[hex/terrain/town/house,pic actions]
9916      (-0.1289, 0.0933)
9917      -- (-0.1186, 0.1207)
9918      -- (-0.0683, 0.1017)
9919      -- (-0.0787, 0.0743)
9920      --cycle
9921      ;
9922      \path[hex/terrain/town/house,pic actions]
9923      ( 0.2223, 0.7399)
9924      -- ( 0.2483, 0.7532)
9925      -- ( 0.2727, 0.7054)
9926      -- ( 0.2467, 0.6920)
9927      --cycle
9928      ;
9929      \path[hex/terrain/town/house,pic actions]
9930      ( 0.2223, 0.7399)
9931      -- ( 0.2483, 0.7532)
9932      -- ( 0.2727, 0.7054)
9933      -- ( 0.2467, 0.6920)
9934      --cycle
9935      ;
9936      \path[hex/terrain/town/house,pic actions]
9937      ( 0.5440, 0.7476)
9938      -- ( 0.5576, 0.7217)
9939      -- ( 0.5102, 0.6965)
9940      -- ( 0.4965, 0.7224)
9941      --cycle
9942      ;
9943      \path[hex/terrain/town/house,pic actions]
9944      ( 0.5440, 0.7476)
9945      -- ( 0.5576, 0.7217)
9946      -- ( 0.5102, 0.6965)
9947      -- ( 0.4965, 0.7224)
9948      --cycle
9949      ;
9950      \path[hex/terrain/town/house,pic actions]
9951      ( 0.5919, 0.6377)
9952      -- ( 0.6068, 0.6125)
9953      -- ( 0.5604, 0.5853)
9954      -- ( 0.5456, 0.6106)
9955      --cycle
9956      ;
9957      \path[hex/terrain/town/house,pic actions]
9958      ( 0.5919, 0.6377)
9959      -- ( 0.6068, 0.6125)
9960      -- ( 0.5604, 0.5853)
9961      -- ( 0.5456, 0.6106)

```

```

9962 --cycle
9963 ;
9964 \path[hex/terrain/town/house,pic actions]
9965 ( 0.6224, 0.5979)
9966 -- ( 0.6382, 0.5732)
9967 -- ( 0.5930, 0.5443)
9968 -- ( 0.5772, 0.5690)
9969 --cycle
9970 ;
9971 \path[hex/terrain/town/house,pic actions]
9972 ( 0.6224, 0.5979)
9973 -- ( 0.6382, 0.5732)
9974 -- ( 0.5930, 0.5443)
9975 -- ( 0.5772, 0.5690)
9976 --cycle
9977 ;
9978 \path[hex/terrain/town/house,pic actions]
9979 ( 0.4104, 0.6743)
9980 -- ( 0.4255, 0.6491)
9981 -- ( 0.3795, 0.6215)
9982 -- ( 0.3644, 0.6466)
9983 --cycle
9984 ;
9985 \path[hex/terrain/town/house,pic actions]
9986 ( 0.4104, 0.6743)
9987 -- ( 0.4255, 0.6491)
9988 -- ( 0.3795, 0.6215)
9989 -- ( 0.3644, 0.6466)
9990 --cycle
9991 ;
9992 \path[hex/terrain/town/house,pic actions]
9993 ( 0.4437, 0.6203)
9994 -- ( 0.4592, 0.5954)
9995 -- ( 0.4136, 0.5671)
9996 -- ( 0.3981, 0.5918)
9997 --cycle
9998 ;
9999 \path[hex/terrain/town/house,pic actions]
10000 ( 0.4437, 0.6203)
10001 -- ( 0.4592, 0.5954)
10002 -- ( 0.4136, 0.5671)
10003 -- ( 0.3981, 0.5918)
10004 --cycle
10005 ;
10006 \path[hex/terrain/town/house,pic actions]
10007 ( 0.5275, 0.4892)
10008 -- ( 0.5449, 0.4656)
10009 -- ( 0.5018, 0.4337)
10010 -- ( 0.4844, 0.4571)
10011 --cycle
10012 ;
10013 \path[hex/terrain/town/house,pic actions]
10014 ( 0.5275, 0.4892)

```

```

10015  -- ( 0.5449, 0.4656)
10016  -- ( 0.5018, 0.4337)
10017  -- ( 0.4844, 0.4571)
10018  --cycle
10019  ;
10020  \path[hex/terrain/town/house,pic actions]
10021  ( 0.2900, 0.6234)
10022  -- ( 0.3087, 0.6008)
10023  -- ( 0.2671, 0.5666)
10024  -- ( 0.2485, 0.5892)
10025  --cycle
10026  ;
10027  \path[hex/terrain/town/house,pic actions]
10028  ( 0.2900, 0.6234)
10029  -- ( 0.3087, 0.6008)
10030  -- ( 0.2671, 0.5666)
10031  -- ( 0.2485, 0.5892)
10032  --cycle
10033  ;
10034  \path[hex/terrain/town/house,pic actions]
10035  ( 0.3295, 0.5855)
10036  -- ( 0.3477, 0.5626)
10037  -- ( 0.3058, 0.5291)
10038  -- ( 0.2875, 0.5519)
10039  --cycle
10040  ;
10041  \path[hex/terrain/town/house,pic actions]
10042  ( 0.3295, 0.5855)
10043  -- ( 0.3477, 0.5626)
10044  -- ( 0.3058, 0.5291)
10045  -- ( 0.2875, 0.5519)
10046  --cycle
10047  ;
10048  \path[hex/terrain/town/house,pic actions]
10049  ( 0.3915, 0.5035)
10050  -- ( 0.4098, 0.4807)
10051  -- ( 0.3680, 0.4471)
10052  -- ( 0.3497, 0.4699)
10053  --cycle
10054  ;
10055  \path[hex/terrain/town/house,pic actions]
10056  ( 0.3915, 0.5035)
10057  -- ( 0.4098, 0.4807)
10058  -- ( 0.3680, 0.4471)
10059  -- ( 0.3497, 0.4699)
10060  --cycle
10061  ;
10062  \path[hex/terrain/town/house,pic actions]
10063  ( 0.4274, 0.4691)
10064  -- ( 0.4472, 0.4474)
10065  -- ( 0.4075, 0.4112)
10066  -- ( 0.3878, 0.4327)
10067  --cycle

```

```

10068 ;
10069 \path[hex/terrain/town/house,pic actions]
10070 ( 0.4274, 0.4691)
10071 -- ( 0.4472, 0.4474)
10072 -- ( 0.4075, 0.4112)
10073 -- ( 0.3878, 0.4327)
10074 --cycle
10075 ;
10076 \path[hex/terrain/town/house,pic actions]
10077 ( 0.0465, 0.7243)
10078 -- ( 0.0751, 0.7305)
10079 -- ( 0.0864, 0.6779)
10080 -- ( 0.0578, 0.6717)
10081 --cycle
10082 ;
10083 \path[hex/terrain/town/house,pic actions]
10084 ( 0.0465, 0.7243)
10085 -- ( 0.0751, 0.7305)
10086 -- ( 0.0864, 0.6779)
10087 -- ( 0.0578, 0.6717)
10088 --cycle
10089 ;
10090 \path[hex/terrain/town/house,pic actions]
10091 (-0.0312, 0.7116)
10092 -- (-0.0338, 0.7407)
10093 -- ( 0.0197, 0.7456)
10094 -- ( 0.0223, 0.7164)
10095 --cycle
10096 ;
10097 \path[hex/terrain/town/house,pic actions]
10098 (-0.0312, 0.7116)
10099 -- (-0.0338, 0.7407)
10100 -- ( 0.0197, 0.7456)
10101 -- ( 0.0223, 0.7164)
10102 --cycle
10103 ;
10104 \path[hex/terrain/town/house,pic actions]
10105 (-0.1044, 0.7143)
10106 -- (-0.1084, 0.7434)
10107 -- (-0.0552, 0.7507)
10108 -- (-0.0512, 0.7216)
10109 --cycle
10110 ;
10111 \path[hex/terrain/town/house,pic actions]
10112 (-0.1044, 0.7143)
10113 -- (-0.1084, 0.7434)
10114 -- (-0.0552, 0.7507)
10115 -- (-0.0512, 0.7216)
10116 --cycle
10117 ;
10118 \path[hex/terrain/town/house,pic actions]
10119 (-0.1250, 0.6753)
10120 -- (-0.1169, 0.7034)

```

```

10121 -- (-0.0653, 0.6887)
10122 -- (-0.0733, 0.6605)
10123 --cycle
10124 ;
10125 \path[hex/terrain/town/house,pic actions]
10126 (-0.1250, 0.6753)
10127 -- (-0.1169, 0.7034)
10128 -- (-0.0653, 0.6887)
10129 -- (-0.0733, 0.6605)
10130 --cycle
10131 ;
10132 \path[hex/terrain/town/house,pic actions]
10133 (-0.2293, 0.7263)
10134 -- (-0.2016, 0.7170)
10135 -- (-0.2185, 0.6660)
10136 -- (-0.2463, 0.6753)
10137 --cycle
10138 ;
10139 \path[hex/terrain/town/house,pic actions]
10140 (-0.2293, 0.7263)
10141 -- (-0.2016, 0.7170)
10142 -- (-0.2185, 0.6660)
10143 -- (-0.2463, 0.6753)
10144 --cycle
10145 ;
10146 \path[hex/terrain/town/house,pic actions]
10147 (-0.4164, 0.8019)
10148 -- (-0.3886, 0.7926)
10149 -- (-0.4056, 0.7417)
10150 -- (-0.4335, 0.7510)
10151 --cycle
10152 ;
10153 \path[hex/terrain/town/house,pic actions]
10154 (-0.4164, 0.8019)
10155 -- (-0.3886, 0.7926)
10156 -- (-0.4056, 0.7417)
10157 -- (-0.4335, 0.7510)
10158 --cycle
10159 ;
10160 \path[hex/terrain/town/house,pic actions]
10161 (-0.3769, 0.7827)
10162 -- (-0.3486, 0.7746)
10163 -- (-0.3636, 0.7230)
10164 -- (-0.3918, 0.7311)
10165 --cycle
10166 ;
10167 \path[hex/terrain/town/house,pic actions]
10168 (-0.3769, 0.7827)
10169 -- (-0.3486, 0.7746)
10170 -- (-0.3636, 0.7230)
10171 -- (-0.3918, 0.7311)
10172 --cycle
10173 ;

```

```

10174 \path[hex/terrain/town/house,pic actions]
10175 (-0.2690, 0.8085)
10176 -- (-0.2696, 0.8379)
10177 -- (-0.2159, 0.8389)
10178 -- (-0.2153, 0.8097)
10179 --cycle
10180 ;
10181 \path[hex/terrain/town/house,pic actions]
10182 (-0.2690, 0.8085)
10183 -- (-0.2696, 0.8379)
10184 -- (-0.2159, 0.8389)
10185 -- (-0.2153, 0.8097)
10186 --cycle
10187 ;
10188 \path[hex/terrain/town/house,pic actions]
10189 (-0.0864, 0.8532)
10190 -- (-0.0767, 0.8256)
10191 -- (-0.1273, 0.8076)
10192 -- (-0.1371, 0.8352)
10193 --cycle
10194 ;
10195 \path[hex/terrain/town/house,pic actions]
10196 (-0.0864, 0.8532)
10197 -- (-0.0767, 0.8256)
10198 -- (-0.1273, 0.8076)
10199 -- (-0.1371, 0.8352)
10200 --cycle
10201 ;
10202 \path[hex/terrain/town/house,pic actions]
10203 (-0.3699, 0.6041)
10204 -- (-0.3425, 0.5939)
10205 -- (-0.3609, 0.5436)
10206 -- (-0.3885, 0.5537)
10207 --cycle
10208 ;
10209 \path[hex/terrain/town/house,pic actions]
10210 (-0.3699, 0.6041)
10211 -- (-0.3425, 0.5939)
10212 -- (-0.3609, 0.5436)
10213 -- (-0.3885, 0.5537)
10214 --cycle
10215 ;
10216 \path[hex/terrain/town/house,pic actions]
10217 (-0.4770, 0.6412)
10218 -- (-0.4500, 0.6299)
10219 -- (-0.4707, 0.5804)
10220 -- (-0.4978, 0.5918)
10221 --cycle
10222 ;
10223 \path[hex/terrain/town/house,pic actions]
10224 (-0.4770, 0.6412)
10225 -- (-0.4500, 0.6299)
10226 -- (-0.4707, 0.5804)

```

```

10227 -- (-0.4978, 0.5918)
10228 --cycle
10229 ;
10230 \path[hex/terrain/town/house,pic actions]
10231 (-0.4348, 0.4860)
10232 -- (-0.4060, 0.4806)
10233 -- (-0.4159, 0.4278)
10234 -- (-0.4447, 0.4332)
10235 --cycle
10236 ;
10237 \path[hex/terrain/town/house,pic actions]
10238 (-0.4348, 0.4860)
10239 -- (-0.4060, 0.4806)
10240 -- (-0.4159, 0.4278)
10241 -- (-0.4447, 0.4332)
10242 --cycle
10243 ;
10244 \path[hex/terrain/town/house,pic actions]
10245 (-0.4771, 0.4952)
10246 -- (-0.4520, 0.4800)
10247 -- (-0.4799, 0.4341)
10248 -- (-0.5050, 0.4493)
10249 --cycle
10250 ;
10251 \path[hex/terrain/town/house,pic actions]
10252 (-0.4771, 0.4952)
10253 -- (-0.4520, 0.4800)
10254 -- (-0.4799, 0.4341)
10255 -- (-0.5050, 0.4493)
10256 --cycle
10257 ;
10258 \path[hex/terrain/town/house,pic actions]
10259 (-0.5175, 0.4232)
10260 -- (-0.4917, 0.4092)
10261 -- (-0.5176, 0.3620)
10262 -- (-0.5433, 0.3761)
10263 --cycle
10264 ;
10265 \path[hex/terrain/town/house,pic actions]
10266 (-0.5175, 0.4232)
10267 -- (-0.4917, 0.4092)
10268 -- (-0.5176, 0.3620)
10269 -- (-0.5433, 0.3761)
10270 --cycle
10271 ;
10272 \path[hex/terrain/town/house,pic actions]
10273 (-0.5739, 0.5614)
10274 -- (-0.5487, 0.5464)
10275 -- (-0.5762, 0.5003)
10276 -- (-0.6013, 0.5152)
10277 --cycle
10278 ;
10279 \path[hex/terrain/town/house,pic actions]

```

```

10280      (-0.5739, 0.5614)
10281      -- (-0.5487, 0.5464)
10282      -- (-0.5762, 0.5003)
10283      -- (-0.6013, 0.5152)
10284      --cycle
10285      ;
10286      \path[hex/terrain/town/house,pic actions]
10287      (-0.6244, 0.4780)
10288      -- (-0.5977, 0.4661)
10289      -- (-0.6195, 0.4170)
10290      -- (-0.6463, 0.4289)
10291      --cycle
10292      ;
10293      \path[hex/terrain/town/house,pic actions]
10294      (-0.6244, 0.4780)
10295      -- (-0.5977, 0.4661)
10296      -- (-0.6195, 0.4170)
10297      -- (-0.6463, 0.4289)
10298      --cycle
10299      ;
10300      \path[hex/terrain/town/house,pic actions]
10301      (-0.6236, 0.1401)
10302      -- (-0.6192, 0.1691)
10303      -- (-0.5661, 0.1611)
10304      -- (-0.5705, 0.1321)
10305      --cycle
10306      ;
10307      \path[hex/terrain/town/house,pic actions]
10308      (-0.6236, 0.1401)
10309      -- (-0.6192, 0.1691)
10310      -- (-0.5661, 0.1611)
10311      -- (-0.5705, 0.1321)
10312      --cycle
10313      ;
10314      \path[hex/terrain/town/house,pic actions]
10315      (-0.3872, 0.3590)
10316      -- (-0.3829, 0.3880)
10317      -- (-0.3297, 0.3800)
10318      -- (-0.3341, 0.3510)
10319      --cycle
10320      ;
10321      \path[hex/terrain/town/house,pic actions]
10322      (-0.3872, 0.3590)
10323      -- (-0.3829, 0.3880)
10324      -- (-0.3297, 0.3800)
10325      -- (-0.3341, 0.3510)
10326      --cycle
10327      ;
10328      \path[hex/terrain/town/house,pic actions]
10329      (-0.6525, 0.1021)
10330      -- (-0.6404, 0.1288)
10331      -- (-0.5915, 0.1066)
10332      -- (-0.6036, 0.0799)

```

```

10333  --cycle
10334  ;
10335  \path[hex/terrain/town/house,pic actions]
10336  (-0.6525, 0.1021)
10337  -- (-0.6404, 0.1288)
10338  -- (-0.5915, 0.1066)
10339  -- (-0.6036, 0.0799)
10340  --cycle
10341  ;
10342  \path[hex/terrain/town/house,pic actions]
10343  (-0.4323, 0.3237)
10344  -- (-0.4202, 0.3503)
10345  -- (-0.3713, 0.3280)
10346  -- (-0.3834, 0.3014)
10347  --cycle
10348  ;
10349  \path[hex/terrain/town/house,pic actions]
10350  (-0.4323, 0.3237)
10351  -- (-0.4202, 0.3503)
10352  -- (-0.3713, 0.3280)
10353  -- (-0.3834, 0.3014)
10354  --cycle
10355  ;
10356  \path[hex/terrain/town/house,pic actions]
10357  (-0.3470, 0.2846)
10358  -- (-0.3349, 0.3113)
10359  -- (-0.2859, 0.2891)
10360  -- (-0.2981, 0.2624)
10361  --cycle
10362  ;
10363  \path[hex/terrain/town/house,pic actions]
10364  (-0.3470, 0.2846)
10365  -- (-0.3349, 0.3113)
10366  -- (-0.2859, 0.2891)
10367  -- (-0.2981, 0.2624)
10368  --cycle
10369  ;
10370  \path[hex/terrain/town/house,pic actions]
10371  (-0.3053, 0.3741)
10372  -- (-0.2932, 0.4008)
10373  -- (-0.2443, 0.3786)
10374  -- (-0.2564, 0.3519)
10375  --cycle
10376  ;
10377  \path[hex/terrain/town/house,pic actions]
10378  (-0.3053, 0.3741)
10379  -- (-0.2932, 0.4008)
10380  -- (-0.2443, 0.3786)
10381  -- (-0.2564, 0.3519)
10382  --cycle
10383  ;
10384  \path[hex/terrain/town/house,pic actions]
10385  (-0.6751, 0.0465)

```

```

10386 -- (-0.6666, 0.0746)
10387 -- (-0.6152, 0.0590)
10388 -- (-0.6237, 0.0310)
10389 --cycle
10390 ;
10391 \path[hex/terrain/town/house,pic actions]
10392 (-0.6751, 0.0465)
10393 -- (-0.6666, 0.0746)
10394 -- (-0.6152, 0.0590)
10395 -- (-0.6237, 0.0310)
10396 --cycle
10397 ;
10398 \path[hex/terrain/town/house,pic actions]
10399 (-0.7316,-0.0595)
10400 -- (-0.7215,-0.0320)
10401 -- (-0.6711,-0.0505)
10402 -- (-0.6812,-0.0780)
10403 --cycle
10404 ;
10405 \path[hex/terrain/town/house,pic actions]
10406 (-0.7316,-0.0595)
10407 -- (-0.7215,-0.0320)
10408 -- (-0.6711,-0.0505)
10409 -- (-0.6812,-0.0780)
10410 --cycle
10411 ;
10412 \path[hex/terrain/town/house,pic actions]
10413 (-0.7748,-0.1355)
10414 -- (-0.7629,-0.1088)
10415 -- (-0.7138,-0.1305)
10416 -- (-0.7257,-0.1573)
10417 --cycle
10418 ;
10419 \path[hex/terrain/town/house,pic actions]
10420 (-0.7748,-0.1355)
10421 -- (-0.7629,-0.1088)
10422 -- (-0.7138,-0.1305)
10423 -- (-0.7257,-0.1573)
10424 --cycle
10425 ;
10426 \path[hex/terrain/town/house,pic actions]
10427 (-0.6698,-0.1385)
10428 -- (-0.6512,-0.1159)
10429 -- (-0.6098,-0.1501)
10430 -- (-0.6284,-0.1727)
10431 --cycle
10432 ;
10433 \path[hex/terrain/town/house,pic actions]
10434 (-0.6698,-0.1385)
10435 -- (-0.6512,-0.1159)
10436 -- (-0.6098,-0.1501)
10437 -- (-0.6284,-0.1727)
10438 --cycle

```

```

10439 ;
10440 \path[hex/terrain/town/house,pic actions]
10441 (-0.3325,-0.1175)
10442 -- (-0.3067,-0.1313)
10443 -- (-0.3320,-0.1787)
10444 -- (-0.3579,-0.1649)
10445 --cycle
10446 ;
10447 \path[hex/terrain/town/house,pic actions]
10448 (-0.3325,-0.1175)
10449 -- (-0.3067,-0.1313)
10450 -- (-0.3320,-0.1787)
10451 -- (-0.3579,-0.1649)
10452 --cycle
10453 ;
10454 \path[hex/terrain/town/house,pic actions]
10455 (-0.4097,-0.0630)
10456 -- (-0.3827,-0.0741)
10457 -- (-0.4031,-0.1238)
10458 -- (-0.4302,-0.1127)
10459 --cycle
10460 ;
10461 \path[hex/terrain/town/house,pic actions]
10462 (-0.4097,-0.0630)
10463 -- (-0.3827,-0.0741)
10464 -- (-0.4031,-0.1238)
10465 -- (-0.4302,-0.1127)
10466 --cycle
10467 ;
10468 \path[hex/terrain/town/house,pic actions]
10469 (-0.3028, 0.0016)
10470 -- (-0.2734, 0.0016)
10471 -- (-0.2734,-0.0522)
10472 -- (-0.3028,-0.0522)
10473 --cycle
10474 ;
10475 \path[hex/terrain/town/house,pic actions]
10476 (-0.3028, 0.0016)
10477 -- (-0.2734, 0.0016)
10478 -- (-0.2734,-0.0522)
10479 -- (-0.3028,-0.0522)
10480 --cycle
10481 ;
10482 \path[hex/terrain/town/house,pic actions]
10483 (-0.2492,-0.0037)
10484 -- (-0.2198,-0.0037)
10485 -- (-0.2198,-0.0574)
10486 -- (-0.2492,-0.0574)
10487 --cycle
10488 ;
10489 \path[hex/terrain/town/house,pic actions]
10490 (-0.2492,-0.0037)
10491 -- (-0.2198,-0.0037)

```

```

10492 -- (-0.2198,-0.0574)
10493 -- (-0.2492,-0.0574)
10494 --cycle
10495 ;
10496 \path[hex/terrain/town/house,pic actions]
10497 (-0.4151, 0.0294)
10498 -- (-0.3858, 0.0294)
10499 -- (-0.3858,-0.0243)
10500 -- (-0.4151,-0.0243)
10501 --cycle
10502 ;
10503 \path[hex/terrain/town/house,pic actions]
10504 (-0.4151, 0.0294)
10505 -- (-0.3858, 0.0294)
10506 -- (-0.3858,-0.0243)
10507 -- (-0.4151,-0.0243)
10508 --cycle
10509 ;
10510 \path[hex/terrain/town/house,pic actions]
10511 (-0.4687, 0.0340)
10512 -- (-0.4394, 0.0340)
10513 -- (-0.4394,-0.0197)
10514 -- (-0.4687,-0.0197)
10515 --cycle
10516 ;
10517 \path[hex/terrain/town/house,pic actions]
10518 (-0.4687, 0.0340)
10519 -- (-0.4394, 0.0340)
10520 -- (-0.4394,-0.0197)
10521 -- (-0.4687,-0.0197)
10522 --cycle
10523 ;
10524 \path[hex/terrain/town/house,pic actions]
10525 (-0.5170, 0.0545)
10526 -- (-0.4876, 0.0545)
10527 -- (-0.4876, 0.0008)
10528 -- (-0.5170, 0.0008)
10529 --cycle
10530 ;
10531 \path[hex/terrain/town/house,pic actions]
10532 (-0.5170, 0.0545)
10533 -- (-0.4876, 0.0545)
10534 -- (-0.4876, 0.0008)
10535 -- (-0.5170, 0.0008)
10536 --cycle
10537 ;
10538 \path[hex/terrain/town/house,pic actions]
10539 (-0.4695, 0.1540)
10540 -- (-0.4413, 0.1461)
10541 -- (-0.4557, 0.0943)
10542 -- (-0.4839, 0.1022)
10543 --cycle
10544 ;

```

```

10545 \path[hex/terrain/town/house,pic actions]
10546 (-0.4695, 0.1540)
10547 -- (-0.4413, 0.1461)
10548 -- (-0.4557, 0.0943)
10549 -- (-0.4839, 0.1022)
10550 --cycle
10551 ;
10552 \path[hex/terrain/town/house,pic actions]
10553 (-0.4511, 0.2320)
10554 -- (-0.4227, 0.2241)
10555 -- (-0.4372, 0.1724)
10556 -- (-0.4654, 0.1803)
10557 --cycle
10558 ;
10559 \path[hex/terrain/town/house,pic actions]
10560 (-0.4511, 0.2320)
10561 -- (-0.4227, 0.2241)
10562 -- (-0.4372, 0.1724)
10563 -- (-0.4654, 0.1803)
10564 --cycle
10565 ;
10566 \path[hex/terrain/town/house,pic actions]
10567 (-0.4191, 0.1396)
10568 -- (-0.3904, 0.1335)
10569 -- (-0.4017, 0.0809)
10570 -- (-0.4304, 0.0871)
10571 --cycle
10572 ;
10573 \path[hex/terrain/town/house,pic actions]
10574 (-0.4191, 0.1396)
10575 -- (-0.3904, 0.1335)
10576 -- (-0.4017, 0.0809)
10577 -- (-0.4304, 0.0871)
10578 --cycle
10579 ;
10580 \path[hex/terrain/town/house,pic actions]
10581 (-0.0048,-0.2963)
10582 -- ( 0.0056,-0.2689)
10583 -- ( 0.0558,-0.2881)
10584 -- ( 0.0453,-0.3155)
10585 --cycle
10586 ;
10587 \path[hex/terrain/town/house,pic actions]
10588 (-0.0048,-0.2963)
10589 -- ( 0.0056,-0.2689)
10590 -- ( 0.0558,-0.2881)
10591 -- ( 0.0453,-0.3155)
10592 --cycle
10593 ;
10594 \path[hex/terrain/town/house,pic actions]
10595 ( 0.0804,-0.1001)
10596 -- ( 0.0908,-0.0728)
10597 -- ( 0.1410,-0.0919)

```

```

10598 -- ( 0.1305,-0.1192)
10599 --cycle
10600 ;
10601 \path[hex/terrain/town/house,pic actions]
10602 ( 0.0804,-0.1001)
10603 -- ( 0.0908,-0.0728)
10604 -- ( 0.1410,-0.0919)
10605 -- ( 0.1305,-0.1192)
10606 --cycle
10607 ;
10608 \path[hex/terrain/town/house,pic actions]
10609 (-0.1027,-0.2588)
10610 -- (-0.0979,-0.2299)
10611 -- (-0.0449,-0.2387)
10612 -- (-0.0498,-0.2676)
10613 --cycle
10614 ;
10615 \path[hex/terrain/town/house,pic actions]
10616 (-0.1027,-0.2588)
10617 -- (-0.0979,-0.2299)
10618 -- (-0.0449,-0.2387)
10619 -- (-0.0498,-0.2676)
10620 --cycle
10621 ;
10622 \path[hex/terrain/town/house,pic actions]
10623 (-0.1889,-0.2314)
10624 -- (-0.1776,-0.2043)
10625 -- (-0.1281,-0.2251)
10626 -- (-0.1394,-0.2521)
10627 --cycle
10628 ;
10629 \path[hex/terrain/town/house,pic actions]
10630 (-0.1889,-0.2314)
10631 -- (-0.1776,-0.2043)
10632 -- (-0.1281,-0.2251)
10633 -- (-0.1394,-0.2521)
10634 --cycle
10635 ;
10636 \path[hex/terrain/town/house,pic actions]
10637 (-0.1180,-0.3033)
10638 -- (-0.1077,-0.2759)
10639 -- (-0.0575,-0.2947)
10640 -- (-0.0677,-0.3221)
10641 --cycle
10642 ;
10643 \path[hex/terrain/town/house,pic actions]
10644 (-0.1180,-0.3033)
10645 -- (-0.1077,-0.2759)
10646 -- (-0.0575,-0.2947)
10647 -- (-0.0677,-0.3221)
10648 --cycle
10649 ;
10650 \path[hex/terrain/town/house,pic actions]

```

```

10651 (-0.2120,-0.2801)
10652 -- (-0.2010,-0.2529)
10653 -- (-0.1512,-0.2729)
10654 -- (-0.1622,-0.3002)
10655 --cycle
10656 ;
10657 \path[hex/terrain/town/house,pic actions]
10658 (-0.2120,-0.2801)
10659 -- (-0.2010,-0.2529)
10660 -- (-0.1512,-0.2729)
10661 -- (-0.1622,-0.3002)
10662 --cycle
10663 ;
10664 \path[hex/terrain/town/house,pic actions]
10665 (-0.2265,-0.3343)
10666 -- (-0.2161,-0.3069)
10667 -- (-0.1659,-0.3259)
10668 -- (-0.1762,-0.3533)
10669 --cycle
10670 ;
10671 \path[hex/terrain/town/house,pic actions]
10672 (-0.2265,-0.3343)
10673 -- (-0.2161,-0.3069)
10674 -- (-0.1659,-0.3259)
10675 -- (-0.1762,-0.3533)
10676 --cycle
10677 ;
10678 \path[hex/terrain/town/house,pic actions]
10679 (-0.0728,-0.3520)
10680 -- (-0.0436,-0.3488)
10681 -- (-0.0379,-0.4022)
10682 -- (-0.0670,-0.4054)
10683 --cycle
10684 ;
10685 \path[hex/terrain/town/house,pic actions]
10686 (-0.0728,-0.3520)
10687 -- (-0.0436,-0.3488)
10688 -- (-0.0379,-0.4022)
10689 -- (-0.0670,-0.4054)
10690 --cycle
10691 ;
10692 \path[hex/terrain/town/house,pic actions]
10693 ( 0.3598,-0.6299)
10694 -- ( 0.3752,-0.6051)
10695 -- ( 0.4209,-0.6334)
10696 -- ( 0.4054,-0.6583)
10697 --cycle
10698 ;
10699 \path[hex/terrain/town/house,pic actions]
10700 ( 0.3598,-0.6299)
10701 -- ( 0.3752,-0.6051)
10702 -- ( 0.4209,-0.6334)
10703 -- ( 0.4054,-0.6583)

```

```

10704  --cycle
10705  ;
10706  \path[hex/terrain/town/house,pic actions]
10707  ( 0.3284,-0.6582)
10708  -- ( 0.3482,-0.6365)
10709  -- ( 0.3879,-0.6727)
10710  -- ( 0.3681,-0.6944)
10711  --cycle
10712  ;
10713  \path[hex/terrain/town/house,pic actions]
10714  ( 0.3284,-0.6582)
10715  -- ( 0.3482,-0.6365)
10716  -- ( 0.3879,-0.6727)
10717  -- ( 0.3681,-0.6944)
10718  --cycle
10719  ;
10720  \path[hex/terrain/town/house,pic actions]
10721  (-0.8159,-0.3188)
10722  -- (-0.7892,-0.3067)
10723  -- (-0.7670,-0.3556)
10724  -- (-0.7937,-0.3677)
10725  --cycle
10726  ;
10727  \path[hex/terrain/town/house,pic actions]
10728  (-0.8159,-0.3188)
10729  -- (-0.7892,-0.3067)
10730  -- (-0.7670,-0.3556)
10731  -- (-0.7937,-0.3677)
10732  --cycle
10733  ;
10734  \path[hex/terrain/town/house,pic actions]
10735  (-0.8755, 0.1805)
10736  -- (-0.8623, 0.2066)
10737  -- (-0.8144, 0.1824)
10738  -- (-0.8276, 0.1562)
10739  --cycle
10740  ;
10741  \path[hex/terrain/town/house,pic actions]
10742  (-0.8755, 0.1805)
10743  -- (-0.8623, 0.2066)
10744  -- (-0.8144, 0.1824)
10745  -- (-0.8276, 0.1562)
10746  --cycle
10747  ;
10748  \path[hex/terrain/town/house,pic actions]
10749  (-0.9400, 0.0507)
10750  -- (-0.9275, 0.0771)
10751  -- (-0.8789, 0.0541)
10752  -- (-0.8916, 0.0276)
10753  --cycle
10754  ;
10755  \path[hex/terrain/town/house,pic actions]
10756  (-0.9400, 0.0507)

```

```

10757 -- (-0.9275, 0.0771)
10758 -- (-0.8789, 0.0541)
10759 -- (-0.8916, 0.0276)
10760 --cycle
10761 ;
10762 \path[hex/terrain/town/house,pic actions]
10763 (-0.9500,-0.0171)
10764 -- (-0.9467, 0.0120)
10765 -- (-0.8934, 0.0060)
10766 -- (-0.8966,-0.0232)
10767 --cycle
10768 ;
10769 \path[hex/terrain/town/house,pic actions]
10770 (-0.9500,-0.0171)
10771 -- (-0.9467, 0.0120)
10772 -- (-0.8934, 0.0060)
10773 -- (-0.8966,-0.0232)
10774 --cycle
10775 ;
10776 \path[hex/terrain/town/house,pic actions]
10777 (-0.0374, 0.6594)
10778 -- (-0.0376, 0.6887)
10779 -- ( 0.0161, 0.6890)
10780 -- ( 0.0162, 0.6598)
10781 --cycle
10782 ;
10783 \path[hex/terrain/town/house,pic actions]
10784 (-0.0374, 0.6594)
10785 -- (-0.0376, 0.6887)
10786 -- ( 0.0161, 0.6890)
10787 -- ( 0.0162, 0.6598)
10788 --cycle
10789 ;
10790 \path[hex/terrain/town/house,pic actions]
10791 ( 0.1600, 0.8267)
10792 -- ( 0.1793, 0.8046)
10793 -- ( 0.1388, 0.7692)
10794 -- ( 0.1195, 0.7913)
10795 --cycle
10796 ;
10797 \path[hex/terrain/town/house,pic actions]
10798 ( 0.1600, 0.8267)
10799 -- ( 0.1793, 0.8046)
10800 -- ( 0.1388, 0.7692)
10801 -- ( 0.1195, 0.7913)
10802 --cycle
10803 ;
10804 \path[hex/terrain/town/house,pic actions]
10805 ( 0.4284, 0.3107)
10806 -- ( 0.4572, 0.3163)
10807 -- ( 0.4672, 0.2634)
10808 -- ( 0.4384, 0.2580)
10809 --cycle

```

```

10810 ;
10811 \path[hex/terrain/town/house,pic actions]
10812 ( 0.4284, 0.3107)
10813 -- ( 0.4572, 0.3163)
10814 -- ( 0.4672, 0.2634)
10815 -- ( 0.4384, 0.2580)
10816 --cycle
10817 ;
10818 \path[hex/terrain/town/house,pic actions]
10819 ( 0.4721, 0.3149)
10820 -- ( 0.5003, 0.3230)
10821 -- ( 0.5151, 0.2714)
10822 -- ( 0.4870, 0.2633)
10823 --cycle
10824 ;
10825 \path[hex/terrain/town/house,pic actions]
10826 ( 0.4721, 0.3149)
10827 -- ( 0.5003, 0.3230)
10828 -- ( 0.5151, 0.2714)
10829 -- ( 0.4870, 0.2633)
10830 --cycle
10831 ;
10832 \path[hex/terrain/town/house,pic actions]
10833 ( 0.5761, 0.3388)
10834 -- ( 0.6049, 0.3443)
10835 -- ( 0.6150, 0.2916)
10836 -- ( 0.5862, 0.2860)
10837 --cycle
10838 ;
10839 \path[hex/terrain/town/house,pic actions]
10840 ( 0.5761, 0.3388)
10841 -- ( 0.6049, 0.3443)
10842 -- ( 0.6150, 0.2916)
10843 -- ( 0.5862, 0.2860)
10844 --cycle
10845 ;
10846 \path[hex/terrain/town/house,pic actions]
10847 ( 0.6283, 0.3369)
10848 -- ( 0.6567, 0.3296)
10849 -- ( 0.6432, 0.2775)
10850 -- ( 0.6148, 0.2849)
10851 --cycle
10852 ;
10853 \path[hex/terrain/town/house,pic actions]
10854 ( 0.6283, 0.3369)
10855 -- ( 0.6567, 0.3296)
10856 -- ( 0.6432, 0.2775)
10857 -- ( 0.6148, 0.2849)
10858 --cycle
10859 ;
10860 \path[hex/terrain/town/house,pic actions]
10861 ( 0.5378, 0.2581)
10862 -- ( 0.5670, 0.2616)

```

```

10863 -- ( 0.5734, 0.2083)
10864 -- ( 0.5443, 0.2047)
10865 --cycle
10866 ;
10867 \path[hex/terrain/town/house,pic actions]
10868 ( 0.5378, 0.2581)
10869 -- ( 0.5670, 0.2616)
10870 -- ( 0.5734, 0.2083)
10871 -- ( 0.5443, 0.2047)
10872 --cycle
10873 ;
10874 \path[hex/terrain/town/house,pic actions]
10875 ( 0.4853, 0.2500)
10876 -- ( 0.5140, 0.2555)
10877 -- ( 0.5241, 0.2028)
10878 -- ( 0.4953, 0.1973)
10879 --cycle
10880 ;
10881 \path[hex/terrain/town/house,pic actions]
10882 ( 0.4853, 0.2500)
10883 -- ( 0.5140, 0.2555)
10884 -- ( 0.5241, 0.2028)
10885 -- ( 0.4953, 0.1973)
10886 --cycle
10887 ;
10888 \path[hex/terrain/town/house,pic actions]
10889 ( 0.4028, 0.0895)
10890 -- ( 0.4321, 0.0895)
10891 -- ( 0.4321, 0.0358)
10892 -- ( 0.4028, 0.0358)
10893 --cycle
10894 ;
10895 \path[hex/terrain/town/house,pic actions]
10896 ( 0.4028, 0.0895)
10897 -- ( 0.4321, 0.0895)
10898 -- ( 0.4321, 0.0358)
10899 -- ( 0.4028, 0.0358)
10900 --cycle
10901 ;
10902 \path[hex/terrain/town/house,pic actions]
10903 ( 0.4612, 0.0957)
10904 -- ( 0.4899, 0.0898)
10905 -- ( 0.4793, 0.0371)
10906 -- ( 0.4506, 0.0430)
10907 --cycle
10908 ;
10909 \path[hex/terrain/town/house,pic actions]
10910 ( 0.4612, 0.0957)
10911 -- ( 0.4899, 0.0898)
10912 -- ( 0.4793, 0.0371)
10913 -- ( 0.4506, 0.0430)
10914 --cycle
10915 ;

```

```

10916 \path[hex/terrain/town/house,pic actions]
10917 ( 0.5422,-0.0041)
10918 -- ( 0.5437,-0.0333)
10919 -- ( 0.4900,-0.0361)
10920 -- ( 0.4885,-0.0068)
10921 --cycle
10922 ;
10923 \path[hex/terrain/town/house,pic actions]
10924 ( 0.5422,-0.0041)
10925 -- ( 0.5437,-0.0333)
10926 -- ( 0.4900,-0.0361)
10927 -- ( 0.4885,-0.0068)
10928 --cycle
10929 ;
10930 \path[hex/terrain/town/house,pic actions]
10931 ( 0.6654,-0.0050)
10932 -- ( 0.6664,-0.0343)
10933 -- ( 0.6128,-0.0361)
10934 -- ( 0.6117,-0.0068)
10935 --cycle
10936 ;
10937 \path[hex/terrain/town/house,pic actions]
10938 ( 0.6654,-0.0050)
10939 -- ( 0.6664,-0.0343)
10940 -- ( 0.6128,-0.0361)
10941 -- ( 0.6117,-0.0068)
10942 --cycle
10943 ;
10944 \path[hex/terrain/town/house,pic actions]
10945 ( 0.7573, 0.2817)
10946 -- ( 0.7646, 0.2533)
10947 -- ( 0.7124, 0.2402)
10948 -- ( 0.7053, 0.2686)
10949 --cycle
10950 ;
10951 \path[hex/terrain/town/house,pic actions]
10952 ( 0.7573, 0.2817)
10953 -- ( 0.7646, 0.2533)
10954 -- ( 0.7124, 0.2402)
10955 -- ( 0.7053, 0.2686)
10956 --cycle
10957 ;
10958 \path[hex/terrain/town/house,pic actions]
10959 ( 0.7393, 0.3502)
10960 -- ( 0.7456, 0.3216)
10961 -- ( 0.6931, 0.3101)
10962 -- ( 0.6868, 0.3387)
10963 --cycle
10964 ;
10965 \path[hex/terrain/town/house,pic actions]
10966 ( 0.7393, 0.3502)
10967 -- ( 0.7456, 0.3216)
10968 -- ( 0.6931, 0.3101)

```

```

10969 -- ( 0.6868, 0.3387)
10970 --cycle
10971 ;
10972 \path[hex/terrain/town/house,pic actions]
10973 ( 0.8114, 0.0963)
10974 -- ( 0.8188, 0.0679)
10975 -- ( 0.7668, 0.0543)
10976 -- ( 0.7594, 0.0826)
10977 --cycle
10978 ;
10979 \path[hex/terrain/town/house,pic actions]
10980 ( 0.8114, 0.0963)
10981 -- ( 0.8188, 0.0679)
10982 -- ( 0.7668, 0.0543)
10983 -- ( 0.7594, 0.0826)
10984 --cycle
10985 ;
10986 \path[hex/terrain/town/house,pic actions]
10987 ( 0.8247,-0.0115)
10988 -- ( 0.8312,-0.0401)
10989 -- ( 0.7788,-0.0521)
10990 -- ( 0.7723,-0.0235)
10991 --cycle
10992 ;
10993 \path[hex/terrain/town/house,pic actions]
10994 ( 0.8247,-0.0115)
10995 -- ( 0.8312,-0.0401)
10996 -- ( 0.7788,-0.0521)
10997 -- ( 0.7723,-0.0235)
10998 --cycle
10999 ;
11000 \path[hex/terrain/town/house,pic actions]
11001 ( 0.9279, 0.0392)
11002 -- ( 0.9358, 0.0110)
11003 -- ( 0.8842,-0.0036)
11004 -- ( 0.8762, 0.0245)
11005 --cycle
11006 ;
11007 \path[hex/terrain/town/house,pic actions]
11008 ( 0.9279, 0.0392)
11009 -- ( 0.9358, 0.0110)
11010 -- ( 0.8842,-0.0036)
11011 -- ( 0.8762, 0.0245)
11012 --cycle
11013 ;
11014 \path[hex/terrain/town/house,pic actions]
11015 ( 0.9473,-0.0199)
11016 -- ( 0.9500,-0.0490)
11017 -- ( 0.8965,-0.0540)
11018 -- ( 0.8939,-0.0248)
11019 --cycle
11020 ;
11021 \path[hex/terrain/town/house,pic actions]

```

```

11022 ( 0.9473,-0.0199)
11023 -- ( 0.9500,-0.0490)
11024 -- ( 0.8965,-0.0540)
11025 -- ( 0.8939,-0.0248)
11026 --cycle
11027 ;
11028 \path[hex/terrain/town/house,pic actions]
11029 ( 0.8832, 0.1513)
11030 -- ( 0.8949, 0.1245)
11031 -- ( 0.8456, 0.1031)
11032 -- ( 0.8339, 0.1300)
11033 --cycle
11034 ;
11035 \path[hex/terrain/town/house,pic actions]
11036 ( 0.8832, 0.1513)
11037 -- ( 0.8949, 0.1245)
11038 -- ( 0.8456, 0.1031)
11039 -- ( 0.8339, 0.1300)
11040 --cycle
11041 ;
11042 \path[hex/terrain/town/house,pic actions]
11043 ( 0.8604, 0.2135)
11044 -- ( 0.8734, 0.1872)
11045 -- ( 0.8254, 0.1634)
11046 -- ( 0.8123, 0.1896)
11047 --cycle
11048 ;
11049 \path[hex/terrain/town/house,pic actions]
11050 ( 0.8604, 0.2135)
11051 -- ( 0.8734, 0.1872)
11052 -- ( 0.8254, 0.1634)
11053 -- ( 0.8123, 0.1896)
11054 --cycle
11055 ;
11056 \path[hex/terrain/town/house,pic actions]
11057 ( 0.7675, 0.2368)
11058 -- ( 0.7736, 0.2082)
11059 -- ( 0.7210, 0.1970)
11060 -- ( 0.7150, 0.2257)
11061 --cycle
11062 ;
11063 \path[hex/terrain/town/house,pic actions]
11064 ( 0.7675, 0.2368)
11065 -- ( 0.7736, 0.2082)
11066 -- ( 0.7210, 0.1970)
11067 -- ( 0.7150, 0.2257)
11068 --cycle
11069 ;
11070 \path[hex/terrain/town/house,pic actions]
11071 ( 0.7696,-0.1796)
11072 -- ( 0.7978,-0.1875)
11073 -- ( 0.7835,-0.2392)
11074 -- ( 0.7552,-0.2314)

```

```

11075 --cycle
11076 ;
11077 \path[hex/terrain/town/house,pic actions]
11078 ( 0.7696,-0.1796)
11079 -- ( 0.7978,-0.1875)
11080 -- ( 0.7835,-0.2392)
11081 -- ( 0.7552,-0.2314)
11082 --cycle
11083 ;
11084 \path[hex/terrain/town/house,pic actions]
11085 ( 0.7546,-0.0830)
11086 -- ( 0.7838,-0.0830)
11087 -- ( 0.7838,-0.1367)
11088 -- ( 0.7546,-0.1367)
11089 --cycle
11090 ;
11091 \path[hex/terrain/town/house,pic actions]
11092 ( 0.7546,-0.0830)
11093 -- ( 0.7838,-0.0830)
11094 -- ( 0.7838,-0.1367)
11095 -- ( 0.7546,-0.1367)
11096 --cycle
11097 ;
11098 \path[hex/terrain/town/house,pic actions]
11099 ( 0.7114,-0.1735)
11100 -- ( 0.7402,-0.1784)
11101 -- ( 0.7313,-0.2313)
11102 -- ( 0.7024,-0.2265)
11103 --cycle
11104 ;
11105 \path[hex/terrain/town/house,pic actions]
11106 ( 0.7114,-0.1735)
11107 -- ( 0.7402,-0.1784)
11108 -- ( 0.7313,-0.2313)
11109 -- ( 0.7024,-0.2265)
11110 --cycle
11111 ;
11112 \path[hex/terrain/town/house,pic actions]
11113 ( 0.6398,-0.0896)
11114 -- ( 0.6691,-0.0896)
11115 -- ( 0.6691,-0.1433)
11116 -- ( 0.6398,-0.1433)
11117 --cycle
11118 ;
11119 \path[hex/terrain/town/house,pic actions]
11120 ( 0.6398,-0.0896)
11121 -- ( 0.6691,-0.0896)
11122 -- ( 0.6691,-0.1433)
11123 -- ( 0.6398,-0.1433)
11124 --cycle
11125 ;
11126 \path[hex/terrain/town/house,pic actions]
11127 ( 0.5390,-0.1093)

```

```

11128 -- ( 0.5377,-0.0801)
11129 -- ( 0.5913,-0.0776)
11130 -- ( 0.5927,-0.1069)
11131 --cycle
11132 ;
11133 \path[hex/terrain/town/house,pic actions]
11134 ( 0.5390,-0.1093)
11135 -- ( 0.5377,-0.0801)
11136 -- ( 0.5913,-0.0776)
11137 -- ( 0.5927,-0.1069)
11138 --cycle
11139 ;
11140 \path[hex/terrain/town/house,pic actions]
11141 ( 0.5171,-0.2250)
11142 -- ( 0.5252,-0.1968)
11143 -- ( 0.5767,-0.2117)
11144 -- ( 0.5687,-0.2399)
11145 --cycle
11146 ;
11147 \path[hex/terrain/town/house,pic actions]
11148 ( 0.5171,-0.2250)
11149 -- ( 0.5252,-0.1968)
11150 -- ( 0.5767,-0.2117)
11151 -- ( 0.5687,-0.2399)
11152 --cycle
11153 ;
11154 \path[hex/terrain/town/house,pic actions]
11155 ( 0.5024,-0.2807)
11156 -- ( 0.5066,-0.2517)
11157 -- ( 0.5597,-0.2597)
11158 -- ( 0.5555,-0.2887)
11159 --cycle
11160 ;
11161 \path[hex/terrain/town/house,pic actions]
11162 ( 0.5024,-0.2807)
11163 -- ( 0.5066,-0.2517)
11164 -- ( 0.5597,-0.2597)
11165 -- ( 0.5555,-0.2887)
11166 --cycle
11167 ;
11168 \path[hex/terrain/town/house,pic actions]
11169 ( 0.6783,-0.2717)
11170 -- ( 0.7056,-0.2824)
11171 -- ( 0.6858,-0.3324)
11172 -- ( 0.6585,-0.3216)
11173 --cycle
11174 ;
11175 \path[hex/terrain/town/house,pic actions]
11176 ( 0.6783,-0.2717)
11177 -- ( 0.7056,-0.2824)
11178 -- ( 0.6858,-0.3324)
11179 -- ( 0.6585,-0.3216)
11180 --cycle

```

```

11181 ;
11182 \path[hex/terrain/town/house,pic actions]
11183 ( 0.4010,-0.3903)
11184 -- ( 0.4019,-0.3609)
11185 -- ( 0.4556,-0.3627)
11186 -- ( 0.4547,-0.3921)
11187 --cycle
11188 ;
11189 \path[hex/terrain/town/house,pic actions]
11190 ( 0.4010,-0.3903)
11191 -- ( 0.4019,-0.3609)
11192 -- ( 0.4556,-0.3627)
11193 -- ( 0.4547,-0.3921)
11194 --cycle
11195 ;
11196 \path[hex/terrain/town/house,pic actions]
11197 ( 0.6576,-0.1610)
11198 -- ( 0.6852,-0.1708)
11199 -- ( 0.6672,-0.2214)
11200 -- ( 0.6396,-0.2116)
11201 --cycle
11202 ;
11203 \path[hex/terrain/town/house,pic actions]
11204 ( 0.6576,-0.1610)
11205 -- ( 0.6852,-0.1708)
11206 -- ( 0.6672,-0.2214)
11207 -- ( 0.6396,-0.2116)
11208 --cycle
11209 ;
11210 \path[hex/terrain/town/house,pic actions]
11211 ( 0.4024,-0.7175)
11212 -- ( 0.4484,-0.7175)
11213 -- ( 0.4484,-0.7785)
11214 -- ( 0.4024,-0.7785)
11215 --cycle
11216 ;
11217 \path[hex/terrain/town/house,pic actions]
11218 ( 0.4024,-0.7175)
11219 -- ( 0.4484,-0.7175)
11220 -- ( 0.4484,-0.7785)
11221 -- ( 0.4024,-0.7785)
11222 --cycle
11223 ;
11224 \path[hex/terrain/town/house,pic actions]
11225 (-0.3999,-0.7917)
11226 -- (-0.3540,-0.7917)
11227 -- (-0.3540,-0.8527)
11228 -- (-0.3999,-0.8527)
11229 --cycle
11230 ;
11231 \path[hex/terrain/town/house,pic actions]
11232 (-0.3999,-0.7917)
11233 -- (-0.3540,-0.7917)

```

```

11234 -- (-0.3540,-0.8527)
11235 -- (-0.3999,-0.8527)
11236 --cycle
11237 ;
11238 \path[hex/terrain/town/house,pic actions]
11239 (-0.7770,-0.2886)
11240 -- (-0.7319,-0.2679)
11241 -- (-0.6985,-0.3406)
11242 -- (-0.7437,-0.3613)
11243 --cycle
11244 ;
11245 \path[hex/terrain/town/house,pic actions]
11246 (-0.7770,-0.2886)
11247 -- (-0.7319,-0.2679)
11248 -- (-0.6985,-0.3406)
11249 -- (-0.7437,-0.3613)
11250 --cycle
11251 ;
11252 \path[hex/terrain/town/house,pic actions]
11253 (-0.1783,-0.5367)
11254 -- (-0.1339,-0.5483)
11255 -- (-0.1492,-0.6074)
11256 -- (-0.1937,-0.5958)
11257 --cycle
11258 ;
11259 \path[hex/terrain/town/house,pic actions]
11260 (-0.1783,-0.5367)
11261 -- (-0.1339,-0.5483)
11262 -- (-0.1492,-0.6074)
11263 -- (-0.1937,-0.5958)
11264 --cycle
11265 ;
11266 \path[hex/terrain/town/house,pic actions]
11267 ( 0.3106,-0.7770)
11268 -- ( 0.3564,-0.7770)
11269 -- ( 0.3564,-0.8380)
11270 -- ( 0.3106,-0.8380)
11271 --cycle
11272 ;
11273 \path[hex/terrain/town/house,pic actions]
11274 ( 0.3106,-0.7770)
11275 -- ( 0.3564,-0.7770)
11276 -- ( 0.3564,-0.8380)
11277 -- ( 0.3106,-0.8380)
11278 --cycle
11279 ;
11280 \path[hex/terrain/town/house,pic actions]
11281 (-0.0626,-0.7954)
11282 -- (-0.0196,-0.8113)
11283 -- (-0.0406,-0.8686)
11284 -- (-0.0837,-0.8527)
11285 --cycle
11286 ;

```

```

11287 \path[hex/terrain/town/house,pic actions]
11288 (-0.0626,-0.7954)
11289 -- (-0.0196,-0.8113)
11290 -- (-0.0406,-0.8686)
11291 -- (-0.0837,-0.8527)
11292 --cycle
11293 ;
11294 \path[hex/terrain/town/house,pic actions]
11295 ( 0.0570,-0.7843)
11296 -- ( 0.1025,-0.7910)
11297 -- ( 0.0936,-0.8514)
11298 -- ( 0.0481,-0.8446)
11299 --cycle
11300 ;
11301 \path[hex/terrain/town/house,pic actions]
11302 ( 0.0570,-0.7843)
11303 -- ( 0.1025,-0.7910)
11304 -- ( 0.0936,-0.8514)
11305 -- ( 0.0481,-0.8446)
11306 --cycle
11307 ;
11308 \path[hex/terrain/town/house,pic actions]
11309 ( 0.0906,-0.6908)
11310 -- ( 0.1345,-0.7046)
11311 -- ( 0.1161,-0.7629)
11312 -- ( 0.0723,-0.7490)
11313 --cycle
11314 ;
11315 \path[hex/terrain/town/house,pic actions]
11316 ( 0.0906,-0.6908)
11317 -- ( 0.1345,-0.7046)
11318 -- ( 0.1161,-0.7629)
11319 -- ( 0.0723,-0.7490)
11320 --cycle
11321 ;
11322 \path[hex/terrain/town/house,pic actions]
11323 (-0.4731,-0.7998)
11324 -- (-0.4283,-0.7899)
11325 -- (-0.4151,-0.8496)
11326 -- (-0.4600,-0.8595)
11327 --cycle
11328 ;
11329 \path[hex/terrain/town/house,pic actions]
11330 (-0.4731,-0.7998)
11331 -- (-0.4283,-0.7899)
11332 -- (-0.4151,-0.8496)
11333 -- (-0.4600,-0.8595)
11334 --cycle
11335 ;
11336 \path[hex/terrain/town/house,pic actions]
11337 ( 0.4125,-0.0879)
11338 -- ( 0.4578,-0.0951)
11339 -- ( 0.4483,-0.1553)

```

```

11340  -- ( 0.4029,-0.1481)
11341  --cycle
11342  ;
11343  \path[hex/terrain/town/house,pic actions]
11344  ( 0.4125,-0.0879)
11345  -- ( 0.4578,-0.0951)
11346  -- ( 0.4483,-0.1553)
11347  -- ( 0.4029,-0.1481)
11348  --cycle
11349  ;
11350  \path[hex/terrain/town/house,pic actions]
11351  ( 0.2078, 0.8568)
11352  -- ( 0.2536, 0.8583)
11353  -- ( 0.2555, 0.7973)
11354  -- ( 0.2097, 0.7958)
11355  --cycle
11356  ;
11357  \path[hex/terrain/town/house,pic actions]
11358  ( 0.2078, 0.8568)
11359  -- ( 0.2536, 0.8583)
11360  -- ( 0.2555, 0.7973)
11361  -- ( 0.2097, 0.7958)
11362  --cycle
11363  ;
11364  \path[hex/terrain/town/house,pic actions]
11365  ( 0.5829,-0.2493)
11366  -- ( 0.6289,-0.2493)
11367  -- ( 0.6289,-0.3104)
11368  -- ( 0.5829,-0.3104)
11369  --cycle
11370  ;
11371  \path[hex/terrain/town/house,pic actions]
11372  ( 0.5829,-0.2493)
11373  -- ( 0.6289,-0.2493)
11374  -- ( 0.6289,-0.3104)
11375  -- ( 0.5829,-0.3104)
11376  --cycle
11377  ;
11378  \path[hex/terrain/town/house,pic actions]
11379  ( 0.2923,-0.1390)
11380  -- ( 0.3109,-0.0970)
11381  -- ( 0.3667,-0.1218)
11382  -- ( 0.3481,-0.1638)
11383  --cycle
11384  ;
11385  \path[hex/terrain/town/house,pic actions]
11386  ( 0.2923,-0.1390)
11387  -- ( 0.3109,-0.0970)
11388  -- ( 0.3667,-0.1218)
11389  -- ( 0.3481,-0.1638)
11390  --cycle
11391  ;
11392  \path[hex/terrain/town/house,pic actions]

```

```

11393 ( 0.6866,-0.0789)
11394 -- ( 0.7324,-0.0789)
11395 -- ( 0.7324,-0.1400)
11396 -- ( 0.6866,-0.1400)
11397 --cycle
11398 ;
11399 \path[hex/terrain/town/house,pic actions]
11400 ( 0.6866,-0.0789)
11401 -- ( 0.7324,-0.0789)
11402 -- ( 0.7324,-0.1400)
11403 -- ( 0.6866,-0.1400)
11404 --cycle
11405 ;
11406 \path[hex/terrain/town/house,pic actions]
11407 ( 0.8206,-0.0922)
11408 -- ( 0.8649,-0.1044)
11409 -- ( 0.8487,-0.1632)
11410 -- ( 0.8045,-0.1511)
11411 --cycle
11412 ;
11413 \path[hex/terrain/town/house,pic actions]
11414 ( 0.8206,-0.0922)
11415 -- ( 0.8649,-0.1044)
11416 -- ( 0.8487,-0.1632)
11417 -- ( 0.8045,-0.1511)
11418 --cycle
11419 ;
11420 \path[hex/terrain/town/house,pic actions]
11421 (-0.3075, 0.5809)
11422 -- (-0.2648, 0.5640)
11423 -- (-0.2872, 0.5072)
11424 -- (-0.3299, 0.5241)
11425 --cycle
11426 ;
11427 \path[hex/terrain/town/house,pic actions]
11428 (-0.3075, 0.5809)
11429 -- (-0.2648, 0.5640)
11430 -- (-0.2872, 0.5072)
11431 -- (-0.3299, 0.5241)
11432 --cycle
11433 ;
11434 \path[hex/terrain/town/house,pic actions]
11435 (-0.7746, 0.3900)
11436 -- (-0.7312, 0.3750)
11437 -- (-0.7511, 0.3173)
11438 -- (-0.7945, 0.3322)
11439 --cycle
11440 ;
11441 \path[hex/terrain/town/house,pic actions]
11442 (-0.7746, 0.3900)
11443 -- (-0.7312, 0.3750)
11444 -- (-0.7511, 0.3173)
11445 -- (-0.7945, 0.3322)

```

```

11446 --cycle
11447 ;
11448 \path[hex/terrain/town/house,pic actions]
11449 (-0.8224, 0.3024)
11450 -- (-0.7807, 0.2831)
11451 -- (-0.8064, 0.2277)
11452 -- (-0.8481, 0.2470)
11453 --cycle
11454 ;
11455 \path[hex/terrain/town/house,pic actions]
11456 (-0.8224, 0.3024)
11457 -- (-0.7807, 0.2831)
11458 -- (-0.8064, 0.2277)
11459 -- (-0.8481, 0.2470)
11460 --cycle
11461 ;
11462 \path[hex/terrain/town/house,pic actions]
11463 (-0.7172, 0.2999)
11464 -- (-0.6959, 0.3406)
11465 -- (-0.6418, 0.3122)
11466 -- (-0.6632, 0.2715)
11467 --cycle
11468 ;
11469 \path[hex/terrain/town/house,pic actions]
11470 (-0.7172, 0.2999)
11471 -- (-0.6959, 0.3406)
11472 -- (-0.6418, 0.3122)
11473 -- (-0.6632, 0.2715)
11474 --cycle
11475 ;
11476 \path[hex/terrain/town/house,pic actions]
11477 (-0.7505, 0.2368)
11478 -- (-0.7273, 0.2764)
11479 -- (-0.6746, 0.2456)
11480 -- (-0.6979, 0.2060)
11481 --cycle
11482 ;
11483 \path[hex/terrain/town/house,pic actions]
11484 (-0.7505, 0.2368)
11485 -- (-0.7273, 0.2764)
11486 -- (-0.6746, 0.2456)
11487 -- (-0.6979, 0.2060)
11488 --cycle
11489 ;
11490 \path[hex/terrain/town/house,pic actions]
11491 (-0.7726, 0.1668)
11492 -- (-0.7521, 0.2080)
11493 -- (-0.6975, 0.1808)
11494 -- (-0.7180, 0.1396)
11495 --cycle
11496 ;
11497 \path[hex/terrain/town/house,pic actions]
11498 (-0.7726, 0.1668)

```

```

11499 -- (-0.7521, 0.2080)
11500 -- (-0.6975, 0.1808)
11501 -- (-0.7180, 0.1396)
11502 --cycle
11503 ;
11504 \path[hex/terrain/town/house,pic actions]
11505 (-0.8067, 0.1033)
11506 -- (-0.7877, 0.1452)
11507 -- (-0.7322, 0.1199)
11508 -- (-0.7512, 0.0781)
11509 --cycle
11510 ;
11511 \path[hex/terrain/town/house,pic actions]
11512 (-0.8067, 0.1033)
11513 -- (-0.7877, 0.1452)
11514 -- (-0.7322, 0.1199)
11515 -- (-0.7512, 0.0781)
11516 --cycle
11517 ;
11518 \path[hex/terrain/town/house,pic actions]
11519 (-0.8292, 0.0434)
11520 -- (-0.8106, 0.0854)
11521 -- (-0.7548, 0.0608)
11522 -- (-0.7733, 0.0188)
11523 --cycle
11524 ;
11525 \path[hex/terrain/town/house,pic actions]
11526 (-0.8292, 0.0434)
11527 -- (-0.8106, 0.0854)
11528 -- (-0.7548, 0.0608)
11529 -- (-0.7733, 0.0188)
11530 --cycle
11531 ;
11532 \path[hex/terrain/town/house,pic actions]
11533 (-0.8479,-0.0238)
11534 -- (-0.8336, 0.0199)
11535 -- (-0.7757, 0.0009)
11536 -- (-0.7899,-0.0427)
11537 --cycle
11538 ;
11539 \path[hex/terrain/town/house,pic actions]
11540 (-0.8479,-0.0238)
11541 -- (-0.8336, 0.0199)
11542 -- (-0.7757, 0.0009)
11543 -- (-0.7899,-0.0427)
11544 --cycle
11545 ;
11546 \path[hex/terrain/town/house,pic actions]
11547 (-0.9015,-0.0795)
11548 -- (-0.8746,-0.0423)
11549 -- (-0.8252,-0.0782)
11550 -- (-0.8521,-0.1153)
11551 --cycle

```

```

11552 ;
11553 \path[hex/terrain/town/house,pic actions]
11554 (-0.9015,-0.0795)
11555 -- (-0.8746,-0.0423)
11556 -- (-0.8252,-0.0782)
11557 -- (-0.8521,-0.1153)
11558 --cycle
11559 ;
11560 \path[hex/terrain/town/house,pic actions]
11561 (-0.5616,-0.6142)
11562 -- (-0.5431,-0.6563)
11563 -- (-0.5990,-0.6808)
11564 -- (-0.6175,-0.6387)
11565 --cycle
11566 ;
11567 \path[hex/terrain/town/house,pic actions]
11568 (-0.5616,-0.6142)
11569 -- (-0.5431,-0.6563)
11570 -- (-0.5990,-0.6808)
11571 -- (-0.6175,-0.6387)
11572 --cycle
11573 ;
11574 \path[hex/terrain/town/house,pic actions]
11575 (-0.0094,-0.6230)
11576 -- ( 0.0047,-0.5793)
11577 -- ( 0.0627,-0.5978)
11578 -- ( 0.0487,-0.6416)
11579 --cycle
11580 ;
11581 \path[hex/terrain/town/house,pic actions]
11582 (-0.0094,-0.6230)
11583 -- ( 0.0047,-0.5793)
11584 -- ( 0.0627,-0.5978)
11585 -- ( 0.0487,-0.6416)
11586 --cycle
11587 ;
11588 \path[hex/terrain/town/house,pic actions]
11589 ( 0.0303,-0.4683)
11590 -- ( 0.0443,-0.4246)
11591 -- ( 0.1024,-0.4432)
11592 -- ( 0.0884,-0.4869)
11593 --cycle
11594 ;
11595 \path[hex/terrain/town/house,pic actions]
11596 ( 0.0303,-0.4683)
11597 -- ( 0.0443,-0.4246)
11598 -- ( 0.1024,-0.4432)
11599 -- ( 0.0884,-0.4869)
11600 --cycle
11601 ;
11602 \path[hex/terrain/town/house,pic actions]
11603 (-0.2507,-0.3956)
11604 -- (-0.2367,-0.3518)

```

```

11605 -- (-0.1786,-0.3704)
11606 -- (-0.1926,-0.4142)
11607 --cycle
11608 ;
11609 \path[hex/terrain/town/house,pic actions]
11610 (-0.2507,-0.3956)
11611 -- (-0.2367,-0.3518)
11612 -- (-0.1786,-0.3704)
11613 -- (-0.1926,-0.4142)
11614 --cycle
11615 ;
11616 \path[hex/terrain/town/house,pic actions]
11617 (-0.3208,-0.3936)
11618 -- (-0.3069,-0.3498)
11619 -- (-0.2487,-0.3684)
11620 -- (-0.2627,-0.4122)
11621 --cycle
11622 ;
11623 \path[hex/terrain/town/house,pic actions]
11624 (-0.3208,-0.3936)
11625 -- (-0.3069,-0.3498)
11626 -- (-0.2487,-0.3684)
11627 -- (-0.2627,-0.4122)
11628 --cycle
11629 ;
11630 \path[hex/terrain/town/house,pic actions]
11631 ( 0.1634,-0.1430)
11632 -- ( 0.1790,-0.0997)
11633 -- ( 0.2365,-0.1205)
11634 -- ( 0.2209,-0.1637)
11635 --cycle
11636 ;
11637 \path[hex/terrain/town/house,pic actions]
11638 ( 0.1634,-0.1430)
11639 -- ( 0.1790,-0.0997)
11640 -- ( 0.2365,-0.1205)
11641 -- ( 0.2209,-0.1637)
11642 --cycle
11643 ;
11644 \path[hex/terrain/town/house,pic actions]
11645 ( 0.1520,-0.2030)
11646 -- ( 0.1715,-0.1614)
11647 -- ( 0.2268,-0.1873)
11648 -- ( 0.2072,-0.2289)
11649 --cycle
11650 ;
11651 \path[hex/terrain/town/house,pic actions]
11652 ( 0.1520,-0.2030)
11653 -- ( 0.1715,-0.1614)
11654 -- ( 0.2268,-0.1873)
11655 -- ( 0.2072,-0.2289)
11656 --cycle
11657 ;

```

```

11658 \path[hex/terrain/town/house,pic actions]
11659 ( 0.0852,-0.3696)
11660 -- ( 0.1047,-0.3280)
11661 -- ( 0.1600,-0.3540)
11662 -- ( 0.1404,-0.3956)
11663 --cycle
11664 ;
11665 \path[hex/terrain/town/house,pic actions]
11666 ( 0.0852,-0.3696)
11667 -- ( 0.1047,-0.3280)
11668 -- ( 0.1600,-0.3540)
11669 -- ( 0.1404,-0.3956)
11670 --cycle
11671 ;
11672 \path[hex/terrain/town/house,pic actions]
11673 ( 0.0197,-0.2063)
11674 -- ( 0.0392,-0.1647)
11675 -- ( 0.0944,-0.1907)
11676 -- ( 0.0750,-0.2323)
11677 --cycle
11678 ;
11679 \path[hex/terrain/town/house,pic actions]
11680 ( 0.0197,-0.2063)
11681 -- ( 0.0392,-0.1647)
11682 -- ( 0.0944,-0.1907)
11683 -- ( 0.0750,-0.2323)
11684 --cycle
11685 ;
11686 \path[hex/terrain/town/house,pic actions]
11687 ( 0.3100, 0.7769)
11688 -- ( 0.3513, 0.7971)
11689 -- ( 0.3781, 0.7423)
11690 -- ( 0.3369, 0.7221)
11691 --cycle
11692 ;
11693 \path[hex/terrain/town/house,pic actions]
11694 ( 0.3100, 0.7769)
11695 -- ( 0.3513, 0.7971)
11696 -- ( 0.3781, 0.7423)
11697 -- ( 0.3369, 0.7221)
11698 --cycle
11699 ;
11700 \path[hex/terrain/town/house,pic actions]
11701 ( 0.5097, 0.3286)
11702 -- ( 0.5510, 0.3488)
11703 -- ( 0.5778, 0.2940)
11704 -- ( 0.5366, 0.2738)
11705 --cycle
11706 ;
11707 \path[hex/terrain/town/house,pic actions]
11708 ( 0.5097, 0.3286)
11709 -- ( 0.5510, 0.3488)
11710 -- ( 0.5778, 0.2940)

```

```

11711 -- ( 0.5366, 0.2738)
11712 --cycle
11713 ;
11714 \path[hex/terrain/town/house,pic actions]
11715 ( 0.4014, 0.8173)
11716 -- ( 0.4429, 0.8369)
11717 -- ( 0.4689, 0.7817)
11718 -- ( 0.4274, 0.7621)
11719 --cycle
11720 ;
11721 \path[hex/terrain/town/house,pic actions]
11722 ( 0.4014, 0.8173)
11723 -- ( 0.4429, 0.8369)
11724 -- ( 0.4689, 0.7817)
11725 -- ( 0.4274, 0.7621)
11726 --cycle
11727 ;
11728 \path[hex/terrain/town/house,pic actions]
11729 ( 0.2627, 0.7599)
11730 -- ( 0.3055, 0.7765)
11731 -- ( 0.3276, 0.7196)
11732 -- ( 0.2848, 0.7030)
11733 --cycle
11734 ;
11735 \path[hex/terrain/town/house,pic actions]
11736 ( 0.2627, 0.7599)
11737 -- ( 0.3055, 0.7765)
11738 -- ( 0.3276, 0.7196)
11739 -- ( 0.2848, 0.7030)
11740 --cycle
11741 ;
11742 \path[hex/terrain/town/house,pic actions]
11743 ( 0.1763, 0.7193)
11744 -- ( 0.2174, 0.7400)
11745 -- ( 0.2448, 0.6855)
11746 -- ( 0.2038, 0.6648)
11747 --cycle
11748 ;
11749 \path[hex/terrain/town/house,pic actions]
11750 ( 0.1763, 0.7193)
11751 -- ( 0.2174, 0.7400)
11752 -- ( 0.2448, 0.6855)
11753 -- ( 0.2038, 0.6648)
11754 --cycle
11755 ;
11756 \path[hex/terrain/town/house,pic actions]
11757 (-0.0655, 0.4707)
11758 -- (-0.0222, 0.4555)
11759 -- (-0.0424, 0.3979)
11760 -- (-0.0858, 0.4131)
11761 --cycle
11762 ;
11763 \path[hex/terrain/town/house,pic actions]

```

```

11764 (-0.0655, 0.4707)
11765 -- (-0.0222, 0.4555)
11766 -- (-0.0424, 0.3979)
11767 -- (-0.0858, 0.4131)
11768 --cycle
11769 ;
11770 \path[hex/terrain/town/house,pic actions]
11771 ( 0.0019, 0.5606)
11772 -- ( 0.0452, 0.5454)
11773 -- ( 0.0251, 0.4878)
11774 -- (-0.0183, 0.5030)
11775 --cycle
11776 ;
11777 \path[hex/terrain/town/house,pic actions]
11778 ( 0.0019, 0.5606)
11779 -- ( 0.0452, 0.5454)
11780 -- ( 0.0251, 0.4878)
11781 -- (-0.0183, 0.5030)
11782 --cycle
11783 ;
11784 \path[hex/terrain/town/house,pic actions]
11785 ( 0.0634, 0.0555)
11786 -- ( 0.1067, 0.0403)
11787 -- ( 0.0865,-0.0174)
11788 -- ( 0.0432,-0.0022)
11789 --cycle
11790 ;
11791 \path[hex/terrain/town/house,pic actions]
11792 ( 0.0634, 0.0555)
11793 -- ( 0.1067, 0.0403)
11794 -- ( 0.0865,-0.0174)
11795 -- ( 0.0432,-0.0022)
11796 --cycle
11797 ;
11798 \path[hex/terrain/town/house,pic actions]
11799 (-0.0445, 0.0687)
11800 -- (-0.0010, 0.0535)
11801 -- (-0.0213,-0.0041)
11802 -- (-0.0646, 0.0110)
11803 --cycle
11804 ;
11805 \path[hex/terrain/town/house,pic actions]
11806 (-0.0445, 0.0687)
11807 -- (-0.0010, 0.0535)
11808 -- (-0.0213,-0.0041)
11809 -- (-0.0646, 0.0110)
11810 --cycle
11811 ;
11812 \path[hex/terrain/town/house,pic actions]
11813 ( 0.0541, 0.5519)
11814 -- ( 0.0966, 0.5344)
11815 -- ( 0.0732, 0.4779)
11816 -- ( 0.0308, 0.4956)

```

```

11817 --cycle
11818 ;
11819 \path[hex/terrain/town/house,pic actions]
11820 ( 0.0541, 0.5519)
11821 -- ( 0.0966, 0.5344)
11822 -- ( 0.0732, 0.4779)
11823 -- ( 0.0308, 0.4956)
11824 --cycle
11825 ;
11826 \path[hex/terrain/town/house,pic actions]
11827 ( 0.0096, 0.8274)
11828 -- ( 0.0163, 0.7820)
11829 -- (-0.0441, 0.7731)
11830 -- (-0.0508, 0.8185)
11831 --cycle
11832 ;
11833 \path[hex/terrain/town/house,pic actions]
11834 ( 0.0096, 0.8274)
11835 -- ( 0.0163, 0.7820)
11836 -- (-0.0441, 0.7731)
11837 -- (-0.0508, 0.8185)
11838 --cycle
11839 ;
11840 \path[hex/terrain/town/house,pic actions]
11841 (-0.0878, 0.6237)
11842 -- (-0.0810, 0.5783)
11843 -- (-0.1415, 0.5693)
11844 -- (-0.1482, 0.6147)
11845 --cycle
11846 ;
11847 \path[hex/terrain/town/house,pic actions]
11848 (-0.0878, 0.6237)
11849 -- (-0.0810, 0.5783)
11850 -- (-0.1415, 0.5693)
11851 -- (-0.1482, 0.6147)
11852 --cycle
11853 ;
11854 \path[hex/terrain/town/house,pic actions]
11855 (-0.0678, 0.8193)
11856 -- (-0.0575, 0.7745)
11857 -- (-0.1168, 0.7608)
11858 -- (-0.1273, 0.8055)
11859 --cycle
11860 ;
11861 \path[hex/terrain/town/house,pic actions]
11862 (-0.0678, 0.8193)
11863 -- (-0.0575, 0.7745)
11864 -- (-0.1168, 0.7608)
11865 -- (-0.1273, 0.8055)
11866 --cycle
11867 ;
11868 \path[hex/terrain/town/house,pic actions]
11869 (-0.1958, 0.8007)

```

```

11870 -- (-0.1517, 0.7877)
11871 -- (-0.1688, 0.7292)
11872 -- (-0.2129, 0.7420)
11873 --cycle
11874 ;
11875 \path[hex/terrain/town/house,pic actions]
11876 (-0.1958, 0.8007)
11877 -- (-0.1517, 0.7877)
11878 -- (-0.1688, 0.7292)
11879 -- (-0.2129, 0.7420)
11880 --cycle
11881 ;
11882 \path[hex/terrain/town/house,pic actions]
11883 ( 0.6001, 0.0672)
11884 -- ( 0.6452, 0.0758)
11885 -- ( 0.6566, 0.0159)
11886 -- ( 0.6115, 0.0072)
11887 --cycle
11888 ;
11889 \path[hex/terrain/town/house,pic actions]
11890 ( 0.6001, 0.0672)
11891 -- ( 0.6452, 0.0758)
11892 -- ( 0.6566, 0.0159)
11893 -- ( 0.6115, 0.0072)
11894 --cycle
11895 ;
11896 \path[hex/terrain/town/house,pic actions]
11897 ( 0.8357, 0.2798)
11898 -- ( 0.8514, 0.2365)
11899 -- ( 0.7940, 0.2158)
11900 -- ( 0.7783, 0.2591)
11901 --cycle
11902 ;
11903 \path[hex/terrain/town/house,pic actions]
11904 ( 0.8357, 0.2798)
11905 -- ( 0.8514, 0.2365)
11906 -- ( 0.7940, 0.2158)
11907 -- ( 0.7783, 0.2591)
11908 --cycle
11909 ;
11910 \path[hex/terrain/town/house,pic actions]
11911 ( 0.4450, 0.0292)
11912 -- ( 0.4606,-0.0141)
11913 -- ( 0.4032,-0.0348)
11914 -- ( 0.3876, 0.0085)
11915 --cycle
11916 ;
11917 \path[hex/terrain/town/house,pic actions]
11918 ( 0.4450, 0.0292)
11919 -- ( 0.4606,-0.0141)
11920 -- ( 0.4032,-0.0348)
11921 -- ( 0.3876, 0.0085)
11922 --cycle

```

```

11923 ;
11924 \path[hex/terrain/town/house,pic actions]
11925 ( 0.9043, 0.1125)
11926 -- ( 0.9184, 0.0687)
11927 -- ( 0.8603, 0.0500)
11928 -- ( 0.8462, 0.0937)
11929 --cycle
11930 ;
11931 \path[hex/terrain/town/house,pic actions]
11932 ( 0.9043, 0.1125)
11933 -- ( 0.9184, 0.0687)
11934 -- ( 0.8603, 0.0500)
11935 -- ( 0.8462, 0.0937)
11936 --cycle
11937 ;
11938 \path[hex/terrain/town/house,pic actions]
11939 ( 0.7148,-0.2814)
11940 -- ( 0.7591,-0.2935)
11941 -- ( 0.7430,-0.3524)
11942 -- ( 0.6987,-0.3402)
11943 --cycle
11944 ;
11945 \path[hex/terrain/town/house,pic actions]
11946 ( 0.7148,-0.2814)
11947 -- ( 0.7591,-0.2935)
11948 -- ( 0.7430,-0.3524)
11949 -- ( 0.6987,-0.3402)
11950 --cycle
11951 ;
11952 \path[hex/terrain/town/house,pic actions]
11953 ( 0.5891,-0.1425)
11954 -- ( 0.5806,-0.1876)
11955 -- ( 0.5207,-0.1764)
11956 -- ( 0.5291,-0.1313)
11957 --cycle
11958 ;
11959 \path[hex/terrain/town/house,pic actions]
11960 ( 0.5891,-0.1425)
11961 -- ( 0.5806,-0.1876)
11962 -- ( 0.5207,-0.1764)
11963 -- ( 0.5291,-0.1313)
11964 --cycle
11965 ;
11966 \path[hex/terrain/town/house,pic actions]
11967 ( 0.5865, 0.0684)
11968 -- ( 0.5782, 0.0233)
11969 -- ( 0.5181, 0.0345)
11970 -- ( 0.5266, 0.0796)
11971 --cycle
11972 ;
11973 \path[hex/terrain/town/house,pic actions]
11974 ( 0.5865, 0.0684)
11975 -- ( 0.5782, 0.0233)

```

```

11976 -- ( 0.5181, 0.0345)
11977 -- ( 0.5266, 0.0796)
11978 --cycle
11979 ;
11980 \path[hex/terrain/town/house,pic actions]
11981 ( 0.4044,-0.3422)
11982 -- ( 0.4189,-0.2987)
11983 -- ( 0.4768,-0.3180)
11984 -- ( 0.4623,-0.3616)
11985 --cycle
11986 ;
11987 \path[hex/terrain/town/house,pic actions]
11988 ( 0.4044,-0.3422)
11989 -- ( 0.4189,-0.2987)
11990 -- ( 0.4768,-0.3180)
11991 -- ( 0.4623,-0.3616)
11992 --cycle
11993 ;
11994 \path[hex/terrain/town/house,pic actions]
11995 ( 0.4665,-0.7188)
11996 -- ( 0.5125,-0.7188)
11997 -- ( 0.5125,-0.7799)
11998 -- ( 0.4665,-0.7799)
11999 --cycle
12000 ;
12001 \path[hex/terrain/town/house,pic actions]
12002 ( 0.4665,-0.7188)
12003 -- ( 0.5125,-0.7188)
12004 -- ( 0.5125,-0.7799)
12005 -- ( 0.4665,-0.7799)
12006 --cycle
12007 ;
12008 \path[hex/terrain/town/house,pic actions]
12009 (-0.1285,-0.5747)
12010 -- (-0.0826,-0.5747)
12011 -- (-0.0826,-0.6356)
12012 -- (-0.1285,-0.6356)
12013 --cycle
12014 ;
12015 \path[hex/terrain/town/house,pic actions]
12016 (-0.1285,-0.5747)
12017 -- (-0.0826,-0.5747)
12018 -- (-0.0826,-0.6356)
12019 -- (-0.1285,-0.6356)
12020 --cycle
12021 ;
12022 \path[hex/terrain/town/house,pic actions]
12023 (-0.2861,-0.6694)
12024 -- (-0.2789,-0.6240)
12025 -- (-0.2186,-0.6336)
12026 -- (-0.2258,-0.6789)
12027 --cycle
12028 ;

```

```

12029  \path[hex/terrain/town/house,pic actions]
12030  (-0.2861,-0.6694)
12031  -- (-0.2789,-0.6240)
12032  -- (-0.2186,-0.6336)
12033  -- (-0.2258,-0.6789)
12034  --cycle
12035  ;
12036  \path[hex/terrain/town/house,pic actions]
12037  (-0.1486,-0.3725)
12038  -- (-0.1414,-0.3271)
12039  -- (-0.0811,-0.3367)
12040  -- (-0.0883,-0.3820)
12041  --cycle
12042  ;
12043  \path[hex/terrain/town/house,pic actions]
12044  (-0.1486,-0.3725)
12045  -- (-0.1414,-0.3271)
12046  -- (-0.0811,-0.3367)
12047  -- (-0.0883,-0.3820)
12048  --cycle
12049  ;
12050  \path[hex/terrain/town/house,pic actions]
12051  (-0.3576,-0.5916)
12052  -- (-0.3319,-0.6297)
12053  -- (-0.3826,-0.6638)
12054  -- (-0.4082,-0.6256)
12055  --cycle
12056  ;
12057  \path[hex/terrain/town/house,pic actions]
12058  (-0.3576,-0.5916)
12059  -- (-0.3319,-0.6297)
12060  -- (-0.3826,-0.6638)
12061  -- (-0.4082,-0.6256)
12062  --cycle
12063  ;
12064  \path[hex/terrain/town/house,pic actions]
12065  (-0.5468,-0.2716)
12066  -- (-0.5213,-0.3098)
12067  -- (-0.5719,-0.3438)
12068  -- (-0.5976,-0.3056)
12069  --cycle
12070  ;
12071  \path[hex/terrain/town/house,pic actions]
12072  (-0.5468,-0.2716)
12073  -- (-0.5213,-0.3098)
12074  -- (-0.5719,-0.3438)
12075  -- (-0.5976,-0.3056)
12076  --cycle
12077  ;
12078  \path[hex/terrain/town/house,pic actions]
12079  (-0.4969,-0.5222)
12080  -- (-0.4767,-0.5634)
12081  -- (-0.5315,-0.5902)

```

```

12082 -- (-0.5518,-0.5490)
12083 --cycle
12084 ;
12085 \path[hex/terrain/town/house,pic actions]
12086 (-0.4969,-0.5222)
12087 -- (-0.4767,-0.5634)
12088 -- (-0.5315,-0.5902)
12089 -- (-0.5518,-0.5490)
12090 --cycle
12091 ;
12092 \path[hex/terrain/town/house,pic actions]
12093 (-0.3963,-0.6922)
12094 -- (-0.3778,-0.7343)
12095 -- (-0.4338,-0.7588)
12096 -- (-0.4522,-0.7168)
12097 --cycle
12098 ;
12099 \path[hex/terrain/town/house,pic actions]
12100 (-0.3963,-0.6922)
12101 -- (-0.3778,-0.7343)
12102 -- (-0.4338,-0.7588)
12103 -- (-0.4522,-0.7168)
12104 --cycle
12105 ;
12106 \path[hex/terrain/town/house,pic actions]
12107 (-0.6145,-0.5157)
12108 -- (-0.5944,-0.5570)
12109 -- (-0.6493,-0.5836)
12110 -- (-0.6694,-0.5423)
12111 --cycle
12112 ;
12113 \path[hex/terrain/town/house,pic actions]
12114 (-0.6145,-0.5157)
12115 -- (-0.5944,-0.5570)
12116 -- (-0.6493,-0.5836)
12117 -- (-0.6694,-0.5423)
12118 --cycle
12119 ;
12120 \path[hex/terrain/town/house,pic actions]
12121 (-0.8791,-0.2053)
12122 -- (-0.8402,-0.1810)
12123 -- (-0.8079,-0.2327)
12124 -- (-0.8468,-0.2571)
12125 --cycle
12126 ;
12127 \path[hex/terrain/town/house,pic actions]
12128 (-0.8791,-0.2053)
12129 -- (-0.8402,-0.1810)
12130 -- (-0.8079,-0.2327)
12131 -- (-0.8468,-0.2571)
12132 --cycle
12133 ;
12134 \path[hex/terrain/town/house,pic actions]

```

```

12135      (-0.9144, 0.1039)
12136      -- (-0.8919, 0.1439)
12137      -- (-0.8388, 0.1140)
12138      -- (-0.8613, 0.0740)
12139      --cycle
12140      ;
12141      \path[hex/terrain/town/house,pic actions]
12142      (-0.9144, 0.1039)
12143      -- (-0.8919, 0.1439)
12144      -- (-0.8388, 0.1140)
12145      -- (-0.8613, 0.0740)
12146      --cycle
12147      ;
12148      \path[hex/terrain/town/house,pic actions]
12149      (-0.4095, 0.2277)
12150      -- (-0.3639, 0.2229)
12151      -- (-0.3703, 0.1622)
12152      -- (-0.4159, 0.1670)
12153      --cycle
12154      ;
12155      \path[hex/terrain/town/house,pic actions]
12156      (-0.4095, 0.2277)
12157      -- (-0.3639, 0.2229)
12158      -- (-0.3703, 0.1622)
12159      -- (-0.4159, 0.1670)
12160      --cycle
12161      ;
12162      \path[hex/terrain/town/house,pic actions]
12163      (-0.3590, 0.4200)
12164      -- (-0.3365, 0.4600)
12165      -- (-0.2833, 0.4302)
12166      -- (-0.3058, 0.3901)
12167      --cycle
12168      ;
12169      \path[hex/terrain/town/house,pic actions]
12170      (-0.3590, 0.4200)
12171      -- (-0.3365, 0.4600)
12172      -- (-0.2833, 0.4302)
12173      -- (-0.3058, 0.3901)
12174      --cycle
12175      ;
12176      \path[hex/terrain/town/house,pic actions]
12177      (-0.0764, 0.3204)
12178      -- (-0.0539, 0.3604)
12179      -- (-0.0007, 0.3306)
12180      -- (-0.0232, 0.2905)
12181      --cycle
12182      ;
12183      \path[hex/terrain/town/house,pic actions]
12184      (-0.0764, 0.3204)
12185      -- (-0.0539, 0.3604)
12186      -- (-0.0007, 0.3306)
12187      -- (-0.0232, 0.2905)

```

```

12188 --cycle
12189 ;
12190 \path[hex/terrain/town/house,pic actions]
12191 (-0.1364, 0.0430)
12192 -- (-0.1139, 0.0831)
12193 -- (-0.0607, 0.0532)
12194 -- (-0.0832, 0.0131)
12195 --cycle
12196 ;
12197 \path[hex/terrain/town/house,pic actions]
12198 (-0.1364, 0.0430)
12199 -- (-0.1139, 0.0831)
12200 -- (-0.0607, 0.0532)
12201 -- (-0.0832, 0.0131)
12202 --cycle
12203 ;
12204 \path[hex/terrain/town/house,pic actions]
12205 (-0.1269, 0.1239)
12206 -- (-0.1149, 0.1681)
12207 -- (-0.0560, 0.1521)
12208 -- (-0.0681, 0.1078)
12209 --cycle
12210 ;
12211 \path[hex/terrain/town/house,pic actions]
12212 (-0.1269, 0.1239)
12213 -- (-0.1149, 0.1681)
12214 -- (-0.0560, 0.1521)
12215 -- (-0.0681, 0.1078)
12216 --cycle
12217 ;
12218 \path[hex/terrain/town/house,pic actions]
12219 (-0.6443,-0.1022)
12220 -- (-0.6321,-0.0579)
12221 -- (-0.5733,-0.0740)
12222 -- (-0.5854,-0.1183)
12223 --cycle
12224 ;
12225 \path[hex/terrain/town/house,pic actions]
12226 (-0.6443,-0.1022)
12227 -- (-0.6321,-0.0579)
12228 -- (-0.5733,-0.0740)
12229 -- (-0.5854,-0.1183)
12230 --cycle
12231 ;
12232 \path[hex/terrain/town/house,pic actions]
12233 (-0.6032, 0.2357)
12234 -- (-0.5912, 0.2800)
12235 -- (-0.5323, 0.2639)
12236 -- (-0.5443, 0.2196)
12237 --cycle
12238 ;
12239 \path[hex/terrain/town/house,pic actions]
12240 (-0.6032, 0.2357)

```

```

12241 -- (-0.5912, 0.2800)
12242 -- (-0.5323, 0.2639)
12243 -- (-0.5443, 0.2196)
12244 --cycle
12245 ;
12246 \path[hex/terrain/town/house,pic actions]
12247 (-0.7230, 0.0020)
12248 -- (-0.7026, 0.0432)
12249 -- (-0.6479, 0.0162)
12250 -- (-0.6682,-0.0250)
12251 --cycle
12252 ;
12253 \path[hex/terrain/town/house,pic actions]
12254 (-0.7230, 0.0020)
12255 -- (-0.7026, 0.0432)
12256 -- (-0.6479, 0.0162)
12257 -- (-0.6682,-0.0250)
12258 --cycle
12259 ;
12260 \path[hex/terrain/town/house,pic actions]
12261 (-0.5055, 0.2596)
12262 -- (-0.4629, 0.2423)
12263 -- (-0.4859, 0.1858)
12264 -- (-0.5285, 0.2031)
12265 --cycle
12266 ;
12267 \path[hex/terrain/town/house,pic actions]
12268 (-0.5055, 0.2596)
12269 -- (-0.4629, 0.2423)
12270 -- (-0.4859, 0.1858)
12271 -- (-0.5285, 0.2031)
12272 --cycle
12273 ;
12274 \path[hex/terrain/town/house,pic actions]
12275 ( 0.1337, 0.3296)
12276 -- ( 0.1283, 0.2840)
12277 -- ( 0.0677, 0.2911)
12278 -- ( 0.0731, 0.3367)
12279 --cycle
12280 ;
12281 \path[hex/terrain/town/house,pic actions]
12282 ( 0.1337, 0.3296)
12283 -- ( 0.1283, 0.2840)
12284 -- ( 0.0677, 0.2911)
12285 -- ( 0.0731, 0.3367)
12286 --cycle
12287 ;
12288 \path[hex/terrain/town/house,pic actions]
12289 ( 0.1476, 0.4414)
12290 -- ( 0.1506, 0.3955)
12291 -- ( 0.0897, 0.3916)
12292 -- ( 0.0867, 0.4375)
12293 --cycle

```

```

12294 ;
12295 \path[hex/terrain/town/house,pic actions]
12296 ( 0.1476, 0.4414)
12297 -- ( 0.1506, 0.3955)
12298 -- ( 0.0897, 0.3916)
12299 -- ( 0.0867, 0.4375)
12300 --cycle
12301 ;
12302 \path[hex/terrain/town/house,pic actions]
12303 ( 0.0539,-0.1542)
12304 -- ( 0.0687,-0.1107)
12305 -- ( 0.1264,-0.1304)
12306 -- ( 0.1116,-0.1738)
12307 --cycle
12308 ;
12309 \path[hex/terrain/town/house,pic actions]
12310 ( 0.0539,-0.1542)
12311 -- ( 0.0687,-0.1107)
12312 -- ( 0.1264,-0.1304)
12313 -- ( 0.1116,-0.1738)
12314 --cycle
12315 ;
12316 \path[hex/terrain/town/house,pic actions]
12317 (-0.0962,-0.1436)
12318 -- (-0.0814,-0.1001)
12319 -- (-0.0237,-0.1198)
12320 -- (-0.0385,-0.1633)
12321 --cycle
12322 ;
12323 \path[hex/terrain/town/house,pic actions]
12324 (-0.0962,-0.1436)
12325 -- (-0.0814,-0.1001)
12326 -- (-0.0237,-0.1198)
12327 -- (-0.0385,-0.1633)
12328 --cycle
12329 ;
12330 \path[hex/terrain/town/house,pic actions]
12331 (-0.1683,-0.0622)
12332 -- (-0.1535,-0.0188)
12333 -- (-0.0958,-0.0385)
12334 -- (-0.1106,-0.0820)
12335 --cycle
12336 ;
12337 \path[hex/terrain/town/house,pic actions]
12338 (-0.1683,-0.0622)
12339 -- (-0.1535,-0.0188)
12340 -- (-0.0958,-0.0385)
12341 -- (-0.1106,-0.0820)
12342 --cycle
12343 ;
12344 \path[hex/terrain/town/house,pic actions]
12345 (-0.1842,-0.1310)
12346 -- (-0.1694,-0.0876)

```

```

12347 -- (-0.1116,-0.1073)
12348 -- (-0.1264,-0.1508)
12349 --cycle
12350 ;
12351 \path[hex/terrain/town/house,pic actions]
12352 (-0.1842,-0.1310)
12353 -- (-0.1694,-0.0876)
12354 -- (-0.1116,-0.1073)
12355 -- (-0.1264,-0.1508)
12356 --cycle
12357 ;
12358 \path[hex/terrain/town/house,pic actions]
12359 ( 0.1167,-0.5813)
12360 -- ( 0.1315,-0.5379)
12361 -- ( 0.1892,-0.5576)
12362 -- ( 0.1744,-0.6011)
12363 --cycle
12364 ;
12365 \path[hex/terrain/town/house,pic actions]
12366 ( 0.1167,-0.5813)
12367 -- ( 0.1315,-0.5379)
12368 -- ( 0.1892,-0.5576)
12369 -- ( 0.1744,-0.6011)
12370 --cycle
12371 ;
12372 \path[hex/terrain/town/house,pic actions]
12373 ( 0.0916,-0.6322)
12374 -- ( 0.1064,-0.5888)
12375 -- ( 0.1642,-0.6085)
12376 -- ( 0.1493,-0.6520)
12377 --cycle
12378 ;
12379 \path[hex/terrain/town/house,pic actions]
12380 ( 0.0916,-0.6322)
12381 -- ( 0.1064,-0.5888)
12382 -- ( 0.1642,-0.6085)
12383 -- ( 0.1493,-0.6520)
12384 --cycle
12385 ;
12386 \path[hex/terrain/town/house,pic actions]
12387 ( 0.3791,-0.5978)
12388 -- ( 0.3941,-0.5544)
12389 -- ( 0.4518,-0.5741)
12390 -- ( 0.4369,-0.6176)
12391 --cycle
12392 ;
12393 \path[hex/terrain/town/house,pic actions]
12394 ( 0.3791,-0.5978)
12395 -- ( 0.3941,-0.5544)
12396 -- ( 0.4518,-0.5741)
12397 -- ( 0.4369,-0.6176)
12398 --cycle
12399 ;

```

```

12400 \path[hex/terrain/town/house,pic actions]
12401 ( 0.4116,-0.5397)
12402 -- ( 0.4392,-0.5029)
12403 -- ( 0.4880,-0.5396)
12404 -- ( 0.4604,-0.5764)
12405 --cycle
12406 ;
12407 \path[hex/terrain/town/house,pic actions]
12408 ( 0.4116,-0.5397)
12409 -- ( 0.4392,-0.5029)
12410 -- ( 0.4880,-0.5396)
12411 -- ( 0.4604,-0.5764)
12412 --cycle
12413 ;
12414 \path[hex/terrain/town/house,pic actions]
12415 ( 0.2218,-0.5853)
12416 -- ( 0.2366,-0.5418)
12417 -- ( 0.2944,-0.5615)
12418 -- ( 0.2796,-0.6051)
12419 --cycle
12420 ;
12421 \path[hex/terrain/town/house,pic actions]
12422 ( 0.2218,-0.5853)
12423 -- ( 0.2366,-0.5418)
12424 -- ( 0.2944,-0.5615)
12425 -- ( 0.2796,-0.6051)
12426 --cycle
12427 ;
12428 \path[hex/terrain/town/house,pic actions]
12429 ( 0.3094, 0.1262)
12430 -- ( 0.3519, 0.1085)
12431 -- ( 0.3284, 0.0522)
12432 -- ( 0.2860, 0.0698)
12433 --cycle
12434 ;
12435 \path[hex/terrain/town/house,pic actions]
12436 ( 0.3094, 0.1262)
12437 -- ( 0.3519, 0.1085)
12438 -- ( 0.3284, 0.0522)
12439 -- ( 0.2860, 0.0698)
12440 --cycle
12441 ;
12442 \path[hex/terrain/town/house,pic actions]
12443 ( 0.2797, 0.1784)
12444 -- ( 0.3041, 0.1395)
12445 -- ( 0.2524, 0.1070)
12446 -- ( 0.2280, 0.1459)
12447 --cycle
12448 ;
12449 \path[hex/terrain/town/house,pic actions]
12450 ( 0.2797, 0.1784)
12451 -- ( 0.3041, 0.1395)
12452 -- ( 0.2524, 0.1070)

```

```

12453 -- ( 0.2280, 0.1459)
12454 --cycle
12455 ;
12456 \path[hex/terrain/town/house,pic actions]
12457 ( 0.7950, 0.1548)
12458 -- ( 0.8065, 0.1103)
12459 -- ( 0.7475, 0.0949)
12460 -- ( 0.7359, 0.1394)
12461 --cycle
12462 ;
12463 \path[hex/terrain/town/house,pic actions]
12464 ( 0.7950, 0.1548)
12465 -- ( 0.8065, 0.1103)
12466 -- ( 0.7475, 0.0949)
12467 -- ( 0.7359, 0.1394)
12468 --cycle
12469 ;
12470 \path[hex/terrain/town/house,pic actions]
12471 ( 0.5739, 0.6926)
12472 -- ( 0.5961, 0.6525)
12473 -- ( 0.5427, 0.6229)
12474 -- ( 0.5205, 0.6632)
12475 --cycle
12476 ;
12477 \path[hex/terrain/town/house,pic actions]
12478 ( 0.5739, 0.6926)
12479 -- ( 0.5961, 0.6525)
12480 -- ( 0.5427, 0.6229)
12481 -- ( 0.5205, 0.6632)
12482 --cycle
12483 ;
12484 \path[hex/terrain/town/house,pic actions]
12485 ( 0.6499, 0.5535)
12486 -- ( 0.6714, 0.5129)
12487 -- ( 0.6174, 0.4844)
12488 -- ( 0.5959, 0.5250)
12489 --cycle
12490 ;
12491 \path[hex/terrain/town/house,pic actions]
12492 ( 0.6499, 0.5535)
12493 -- ( 0.6714, 0.5129)
12494 -- ( 0.6174, 0.4844)
12495 -- ( 0.5959, 0.5250)
12496 --cycle
12497 ;
12498 \path[hex/terrain/town/house,pic actions]
12499 (-0.4994, 0.7998)
12500 -- (-0.4558, 0.8143)
12501 -- (-0.4364, 0.7565)
12502 -- (-0.4800, 0.7419)
12503 --cycle
12504 ;
12505 \path[hex/terrain/town/house,pic actions]

```

```

12506      (-0.4994, 0.7998)
12507      -- (-0.4558, 0.8143)
12508      -- (-0.4364, 0.7565)
12509      -- (-0.4800, 0.7419)
12510      --cycle
12511      ;
12512      \path[hex/terrain/town/house,pic actions]
12513      (-0.3350, 0.7630)
12514      -- (-0.2917, 0.7475)
12515      -- (-0.3125, 0.6901)
12516      -- (-0.3558, 0.7057)
12517      --cycle
12518      ;
12519      \path[hex/terrain/town/house,pic actions]
12520      (-0.3350, 0.7630)
12521      -- (-0.2917, 0.7475)
12522      -- (-0.3125, 0.6901)
12523      -- (-0.3558, 0.7057)
12524      --cycle
12525      ;
12526      \path[hex/terrain/town/house,pic actions]
12527      (-0.4472, 0.6282)
12528      -- (-0.4040, 0.6124)
12529      -- (-0.4252, 0.5551)
12530      -- (-0.4683, 0.5710)
12531      --cycle
12532      ;
12533      \path[hex/terrain/town/house,pic actions]
12534      (-0.4472, 0.6282)
12535      -- (-0.4040, 0.6124)
12536      -- (-0.4252, 0.5551)
12537      -- (-0.4683, 0.5710)
12538      --cycle
12539      ;
12540      \path[hex/terrain/town/house,pic actions]
12541      (-0.5200, 0.6603)
12542      -- (-0.4792, 0.6394)
12543      -- (-0.5070, 0.5851)
12544      -- (-0.5480, 0.6061)
12545      --cycle
12546      ;
12547      \path[hex/terrain/town/house,pic actions]
12548      (-0.5200, 0.6603)
12549      -- (-0.4792, 0.6394)
12550      -- (-0.5070, 0.5851)
12551      -- (-0.5480, 0.6061)
12552      --cycle
12553      ;
12554      \path[hex/terrain/town/house,pic actions]
12555      (-0.5301, 0.5359)
12556      -- (-0.4915, 0.5109)
12557      -- (-0.5247, 0.4597)
12558      -- (-0.5633, 0.4846)

```

```

12559  --cycle
12560  ;
12561  \path[hex/terrain/town/house,pic actions]
12562  (-0.5301, 0.5359)
12563  -- (-0.4915, 0.5109)
12564  -- (-0.5247, 0.4597)
12565  -- (-0.5633, 0.4846)
12566  --cycle
12567  ;
12568  \path[hex/terrain/town/house,pic actions]
12569  (-0.6860, 0.5063)
12570  -- (-0.6426, 0.4914)
12571  -- (-0.6624, 0.4337)
12572  -- (-0.7058, 0.4486)
12573  --cycle
12574  ;
12575  \path[hex/terrain/town/house,pic actions]
12576  (-0.6860, 0.5063)
12577  -- (-0.6426, 0.4914)
12578  -- (-0.6624, 0.4337)
12579  -- (-0.7058, 0.4486)
12580  --cycle
12581  ;
12582  \path[hex/terrain/town/house,pic actions]
12583  (-0.5849, 0.4574)
12584  -- (-0.5414, 0.4425)
12585  -- (-0.5613, 0.3847)
12586  -- (-0.6047, 0.3997)
12587  --cycle
12588  ;
12589  \path[hex/terrain/town/house,pic actions]
12590  (-0.5849, 0.4574)
12591  -- (-0.5414, 0.4425)
12592  -- (-0.5613, 0.3847)
12593  -- (-0.6047, 0.3997)
12594  --cycle
12595  ;
12596  \path[hex/terrain/town/house,pic actions]
12597  (-0.4531,-0.1794)
12598  -- (-0.4094,-0.1941)
12599  -- (-0.4289,-0.2518)
12600  -- (-0.4725,-0.2372)
12601  --cycle
12602  ;
12603  \path[hex/terrain/town/house,pic actions]
12604  (-0.4531,-0.1794)
12605  -- (-0.4094,-0.1941)
12606  -- (-0.4289,-0.2518)
12607  -- (-0.4725,-0.2372)
12608  --cycle
12609  ;
12610  \path[hex/terrain/town/house,pic actions]
12611  (-0.3573, 0.0277)

```

```

12612  -- (-0.3138, 0.0131)
12613  -- (-0.3333,-0.0447)
12614  -- (-0.3768,-0.0300)
12615  --cycle
12616  ;
12617  \path[hex/terrain/town/house,pic actions]
12618  (-0.3573, 0.0277)
12619  -- (-0.3138, 0.0131)
12620  -- (-0.3333,-0.0447)
12621  -- (-0.3768,-0.0300)
12622  --cycle
12623  ;
12624  \path[hex/terrain/town/house,pic actions]
12625  ( 0.3354,-0.4695)
12626  -- ( 0.3141,-0.5101)
12627  -- ( 0.2601,-0.4816)
12628  -- ( 0.2815,-0.4410)
12629  --cycle
12630  ;
12631  \path[hex/terrain/town/house,pic actions]
12632  ( 0.3354,-0.4695)
12633  -- ( 0.3141,-0.5101)
12634  -- ( 0.2601,-0.4816)
12635  -- ( 0.2815,-0.4410)
12636  --cycle
12637  ;
12638  \path[hex/terrain/town/house,pic actions]
12639  ( 0.6206,-0.4111)
12640  -- ( 0.6599,-0.4350)
12641  -- ( 0.6281,-0.4872)
12642  -- ( 0.5889,-0.4632)
12643  --cycle
12644  ;
12645  \path[hex/terrain/town/house,pic actions]
12646  ( 0.6206,-0.4111)
12647  -- ( 0.6599,-0.4350)
12648  -- ( 0.6281,-0.4872)
12649  -- ( 0.5889,-0.4632)
12650  --cycle
12651  ;
12652  \path[hex/terrain/town/house,pic actions]
12653  ( 0.6061,-0.5834)
12654  -- ( 0.6495,-0.5984)
12655  -- ( 0.6296,-0.6561)
12656  -- ( 0.5861,-0.6411)
12657  --cycle
12658  ;
12659  \path[hex/terrain/town/house,pic actions]
12660  ( 0.6061,-0.5834)
12661  -- ( 0.6495,-0.5984)
12662  -- ( 0.6296,-0.6561)
12663  -- ( 0.5861,-0.6411)
12664  --cycle

```

```

12665 ;
12666 \path[hex/terrain/town/house,pic actions]
12667 ( 0.2902, 0.2707)
12668 -- ( 0.3361, 0.2673)
12669 -- ( 0.3317, 0.2065)
12670 -- ( 0.2859, 0.2098)
12671 --cycle
12672 ;
12673 \path[hex/terrain/town/house,pic actions]
12674 ( 0.2902, 0.2707)
12675 -- ( 0.3361, 0.2673)
12676 -- ( 0.3317, 0.2065)
12677 -- ( 0.2859, 0.2098)
12678 --cycle
12679 ;
12680 \path[hex/terrain/town/house,pic actions]
12681 ( 0.2215, 0.2766)
12682 -- ( 0.2673, 0.2733)
12683 -- ( 0.2630, 0.2124)
12684 -- ( 0.2172, 0.2157)
12685 --cycle
12686 ;
12687 \path[hex/terrain/town/house,pic actions]
12688 ( 0.2215, 0.2766)
12689 -- ( 0.2673, 0.2733)
12690 -- ( 0.2630, 0.2124)
12691 -- ( 0.2172, 0.2157)
12692 --cycle
12693 ;
12694 \path[hex/terrain/town/house,pic actions]
12695 (-0.0159, 0.4498)
12696 -- ( 0.0299, 0.4466)
12697 -- ( 0.0256, 0.3857)
12698 -- (-0.0202, 0.3889)
12699 --cycle
12700 ;
12701 \path[hex/terrain/town/house,pic actions]
12702 (-0.0159, 0.4498)
12703 -- ( 0.0299, 0.4466)
12704 -- ( 0.0256, 0.3857)
12705 -- (-0.0202, 0.3889)
12706 --cycle
12707 ;
12708 \path[hex/terrain/town/house,pic actions]
12709 ( 0.0377, 0.1701)
12710 -- ( 0.0835, 0.1668)
12711 -- ( 0.0791, 0.1060)
12712 -- ( 0.0333, 0.1092)
12713 --cycle
12714 ;
12715 \path[hex/terrain/town/house,pic actions]
12716 ( 0.0377, 0.1701)
12717 -- ( 0.0835, 0.1668)

```

```

12718 -- ( 0.0791, 0.1060)
12719 -- ( 0.0333, 0.1092)
12720 --cycle
12721 ;
12722 \path[hex/terrain/town/house,pic actions]
12723 ( 0.0944, 0.1648)
12724 -- ( 0.1403, 0.1657)
12725 -- ( 0.1415, 0.1047)
12726 -- ( 0.0955, 0.1038)
12727 --cycle
12728 ;
12729 \path[hex/terrain/town/house,pic actions]
12730 ( 0.0944, 0.1648)
12731 -- ( 0.1403, 0.1657)
12732 -- ( 0.1415, 0.1047)
12733 -- ( 0.0955, 0.1038)
12734 --cycle
12735 ;
12736 \path[hex/terrain/town/house,pic actions]
12737 ( 0.2434, 0.4429)
12738 -- ( 0.2698, 0.4054)
12739 -- ( 0.2199, 0.3702)
12740 -- ( 0.1935, 0.4077)
12741 --cycle
12742 ;
12743 \path[hex/terrain/town/house,pic actions]
12744 ( 0.2434, 0.4429)
12745 -- ( 0.2698, 0.4054)
12746 -- ( 0.2199, 0.3702)
12747 -- ( 0.1935, 0.4077)
12748 --cycle
12749 ;
12750 \path[hex/terrain/town/house,pic actions]
12751 ( 0.4777, 0.5914)
12752 -- ( 0.4980, 0.5501)
12753 -- ( 0.4432, 0.5232)
12754 -- ( 0.4229, 0.5644)
12755 --cycle
12756 ;
12757 \path[hex/terrain/town/house,pic actions]
12758 ( 0.4777, 0.5914)
12759 -- ( 0.4980, 0.5501)
12760 -- ( 0.4432, 0.5232)
12761 -- ( 0.4229, 0.5644)
12762 --cycle
12763 ;
12764 \path[hex/terrain/town/house,pic actions]
12765 ( 0.4936, 0.5331)
12766 -- ( 0.5191, 0.4949)
12767 -- ( 0.4683, 0.4611)
12768 -- ( 0.4428, 0.4993)
12769 --cycle
12770 ;

```

```

12771 \path[hex/terrain/town/house,pic actions]
12772 ( 0.4936, 0.5331)
12773 -- ( 0.5191, 0.4949)
12774 -- ( 0.4683, 0.4611)
12775 -- ( 0.4428, 0.4993)
12776 --cycle
12777 ;
12778 \path[hex/terrain/town/house,pic actions]
12779 ( 0.4667, 0.4393)
12780 -- ( 0.4871, 0.3980)
12781 -- ( 0.4323, 0.3711)
12782 -- ( 0.4120, 0.4123)
12783 --cycle
12784 ;
12785 \path[hex/terrain/town/house,pic actions]
12786 ( 0.4667, 0.4393)
12787 -- ( 0.4871, 0.3980)
12788 -- ( 0.4323, 0.3711)
12789 -- ( 0.4120, 0.4123)
12790 --cycle
12791 ;
12792 \path[hex/terrain/town/house,pic actions]
12793 (-0.2446,-0.1495)
12794 -- (-0.2153,-0.1488)
12795 -- (-0.2138,-0.2024)
12796 -- (-0.2431,-0.2032)
12797 --cycle
12798 ;
12799 \path[hex/terrain/town/house,pic actions]
12800 (-0.2446,-0.1495)
12801 -- (-0.2153,-0.1488)
12802 -- (-0.2138,-0.2024)
12803 -- (-0.2431,-0.2032)
12804 --cycle
12805 ;
12806 \path[hex/terrain/town/house,pic actions]
12807 (-0.1018, 0.2179)
12808 -- (-0.0915, 0.2454)
12809 -- (-0.0412, 0.2264)
12810 -- (-0.0516, 0.1989)
12811 --cycle
12812 ;
12813 \path[hex/terrain/town/house,pic actions]
12814 (-0.1018, 0.2179)
12815 -- (-0.0915, 0.2454)
12816 -- (-0.0412, 0.2264)
12817 -- (-0.0516, 0.1989)
12818 --cycle
12819 ;
12820 \path[hex/terrain/town/house,pic actions]
12821 ( 0.4189, 0.2515)
12822 -- ( 0.4645, 0.2567)
12823 -- ( 0.4714, 0.1960)

```

```

12824 -- ( 0.4257, 0.1909)
12825 --cycle
12826 ;
12827 \path[hex/terrain/town/house,pic actions]
12828 ( 0.4189, 0.2515)
12829 -- ( 0.4645, 0.2567)
12830 -- ( 0.4714, 0.1960)
12831 -- ( 0.4257, 0.1909)
12832 --cycle
12833 ;
12834 \path[hex/terrain/town/house,pic actions]
12835 ( 0.5784, 0.2650)
12836 -- ( 0.6240, 0.2702)
12837 -- ( 0.6308, 0.2095)
12838 -- ( 0.5852, 0.2043)
12839 --cycle
12840 ;
12841 \path[hex/terrain/town/house,pic actions]
12842 ( 0.5784, 0.2650)
12843 -- ( 0.6240, 0.2702)
12844 -- ( 0.6308, 0.2095)
12845 -- ( 0.5852, 0.2043)
12846 --cycle
12847 ;
12848 \path[hex/terrain/town/house,pic actions]
12849 ( 0.5509, 0.4874)
12850 -- ( 0.5966, 0.4925)
12851 -- ( 0.6034, 0.4319)
12852 -- ( 0.5577, 0.4267)
12853 --cycle
12854 ;
12855 \path[hex/terrain/town/house,pic actions]
12856 ( 0.5509, 0.4874)
12857 -- ( 0.5966, 0.4925)
12858 -- ( 0.6034, 0.4319)
12859 -- ( 0.5577, 0.4267)
12860 --cycle
12861 ;
12862 \path[hex/terrain/town/house,pic actions]
12863 ( 0.1390, 0.6195)
12864 -- ( 0.1654, 0.5820)
12865 -- ( 0.1155, 0.5468)
12866 -- ( 0.0890, 0.5843)
12867 --cycle
12868 ;
12869 \path[hex/terrain/town/house,pic actions]
12870 ( 0.1390, 0.6195)
12871 -- ( 0.1654, 0.5820)
12872 -- ( 0.1155, 0.5468)
12873 -- ( 0.0890, 0.5843)
12874 --cycle
12875 ;
12876 \path[hex/terrain/town/house,pic actions]

```

```

12877 (-0.1780,-0.4082)
12878 -- (-0.1533,-0.3695)
12879 -- (-0.1018,-0.4023)
12880 -- (-0.1265,-0.4410)
12881 --cycle
12882 ;
12883 \path[hex/terrain/town/house,pic actions]
12884 (-0.1780,-0.4082)
12885 -- (-0.1533,-0.3695)
12886 -- (-0.1018,-0.4023)
12887 -- (-0.1265,-0.4410)
12888 --cycle
12889 ;
12890 \path[hex/terrain/town/house,pic actions]
12891 (-0.2611,-0.2396)
12892 -- (-0.2175,-0.2543)
12893 -- (-0.2370,-0.3121)
12894 -- (-0.2805,-0.2974)
12895 --cycle
12896 ;
12897 \path[hex/terrain/town/house,pic actions]
12898 (-0.2611,-0.2396)
12899 -- (-0.2175,-0.2543)
12900 -- (-0.2370,-0.3121)
12901 -- (-0.2805,-0.2974)
12902 --cycle
12903 ;
12904 \path[hex/terrain/town/house,pic actions]
12905 ( 0.1640,-0.8299)
12906 -- ( 0.1872,-0.8299)
12907 -- ( 0.1872,-0.8565)
12908 -- ( 0.1640,-0.8565)
12909 --cycle
12910 ;
12911 \path[hex/terrain/town/house,pic actions]
12912 ( 0.1640,-0.8299)
12913 -- ( 0.1872,-0.8299)
12914 -- ( 0.1872,-0.8565)
12915 -- ( 0.1640,-0.8565)
12916 --cycle
12917 ;
12918 \path[hex/terrain/town/house,pic actions]
12919 (-0.1330,-0.7413)
12920 -- (-0.1099,-0.7413)
12921 -- (-0.1099,-0.7679)
12922 -- (-0.1330,-0.7679)
12923 --cycle
12924 ;
12925 \path[hex/terrain/town/house,pic actions]
12926 (-0.1330,-0.7413)
12927 -- (-0.1099,-0.7413)
12928 -- (-0.1099,-0.7679)
12929 -- (-0.1330,-0.7679)

```

```

12930  --cycle
12931  ;
12932  \path[hex/terrain/town/house,pic actions]
12933  (-0.3280,-0.8061)
12934  -- (-0.3049,-0.8061)
12935  -- (-0.3049,-0.8327)
12936  -- (-0.3280,-0.8327)
12937  --cycle
12938  ;
12939  \path[hex/terrain/town/house,pic actions]
12940  (-0.3280,-0.8061)
12941  -- (-0.3049,-0.8061)
12942  -- (-0.3049,-0.8327)
12943  -- (-0.3280,-0.8327)
12944  --cycle
12945  ;
12946  \path[hex/terrain/town/house,pic actions]
12947  (-0.7302,-0.0754)
12948  -- (-0.7099,-0.0866)
12949  -- (-0.7228,-0.1099)
12950  -- (-0.7430,-0.0988)
12951  --cycle
12952  ;
12953  \path[hex/terrain/town/house,pic actions]
12954  (-0.7302,-0.0754)
12955  -- (-0.7099,-0.0866)
12956  -- (-0.7228,-0.1099)
12957  -- (-0.7430,-0.0988)
12958  --cycle
12959  ;
12960  \path[hex/terrain/town/house,pic actions]
12961  (-0.0147, 0.1985)
12962  -- ( 0.0078, 0.1934)
12963  -- ( 0.0020, 0.1675)
12964  -- (-0.0206, 0.1726)
12965  --cycle
12966  ;
12967  \path[hex/terrain/town/house,pic actions]
12968  (-0.0147, 0.1985)
12969  -- ( 0.0078, 0.1934)
12970  -- ( 0.0020, 0.1675)
12971  -- (-0.0206, 0.1726)
12972  --cycle
12973  ;
12974  \path[hex/terrain/town/house,pic actions]
12975  ( 0.7613, 0.0272)
12976  -- ( 0.7841, 0.0313)
12977  -- ( 0.7889, 0.0050)
12978  -- ( 0.7661, 0.0009)
12979  --cycle
12980  ;
12981  \path[hex/terrain/town/house,pic actions]
12982  ( 0.7613, 0.0272)

```

```

12983 -- ( 0.7841, 0.0313)
12984 -- ( 0.7889, 0.0050)
12985 -- ( 0.7661, 0.0009)
12986 --cycle
12987 ;
12988 \path[hex/terrain/town/house,pic actions]
12989 ( 0.0160, 0.0427)
12990 -- ( 0.0379, 0.0352)
12991 -- ( 0.0294, 0.0100)
12992 -- ( 0.0075, 0.0174)
12993 --cycle
12994 ;
12995 \path[hex/terrain/town/house,pic actions]
12996 ( 0.0160, 0.0427)
12997 -- ( 0.0379, 0.0352)
12998 -- ( 0.0294, 0.0100)
12999 -- ( 0.0075, 0.0174)
13000 --cycle
13001 ;
13002 \path[hex/terrain/town/house,pic actions]
13003 ( 0.3515,-0.2403)
13004 -- ( 0.3743,-0.2442)
13005 -- ( 0.3697,-0.2705)
13006 -- ( 0.3469,-0.2665)
13007 --cycle
13008 ;
13009 \path[hex/terrain/town/house,pic actions]
13010 ( 0.3515,-0.2403)
13011 -- ( 0.3743,-0.2442)
13012 -- ( 0.3697,-0.2705)
13013 -- ( 0.3469,-0.2665)
13014 --cycle
13015 ;
13016 \path[hex/terrain/town/house,pic actions]
13017 ( 0.0718, 0.3637)
13018 -- ( 0.0933, 0.3723)
13019 -- ( 0.1032, 0.3476)
13020 -- ( 0.0817, 0.3390)
13021 --cycle
13022 ;
13023 \path[hex/terrain/town/house,pic actions]
13024 ( 0.0718, 0.3637)
13025 -- ( 0.0933, 0.3723)
13026 -- ( 0.1032, 0.3476)
13027 -- ( 0.0817, 0.3390)
13028 --cycle
13029 ;
13030 \path[hex/terrain/town/house,pic actions]
13031 (-0.2555, 0.2647)
13032 -- (-0.2413, 0.2902)
13033 -- (-0.1944, 0.2641)
13034 -- (-0.2086, 0.2385)
13035 --cycle

```

```

13036 ;
13037 \path[hex/terrain/town/house,pic actions]
13038 (-0.2555, 0.2647)
13039 -- (-0.2413, 0.2902)
13040 -- (-0.1944, 0.2641)
13041 -- (-0.2086, 0.2385)
13042 --cycle
13043 ;
13044 \path[hex/terrain/town/house,pic actions]
13045 (-0.2832, 0.1509)
13046 -- (-0.2826, 0.1802)
13047 -- (-0.2289, 0.1792)
13048 -- (-0.2295, 0.1498)
13049 --cycle
13050 ;
13051 \path[hex/terrain/town/house,pic actions]
13052 (-0.2832, 0.1509)
13053 -- (-0.2826, 0.1802)
13054 -- (-0.2289, 0.1792)
13055 -- (-0.2295, 0.1498)
13056 --cycle
13057 ;
13058 \path[hex/terrain/town/house,pic actions]
13059 (-0.5694, 0.6977)
13060 -- (-0.5248, 0.6870)
13061 -- (-0.5390, 0.6277)
13062 -- (-0.5837, 0.6384)
13063 --cycle
13064 ;
13065 \path[hex/terrain/town/house,pic actions]
13066 (-0.5694, 0.6977)
13067 -- (-0.5248, 0.6870)
13068 -- (-0.5390, 0.6277)
13069 -- (-0.5837, 0.6384)
13070 --cycle
13071 ;
13072 \path[hex/terrain/town/house,pic actions]
13073 (-0.6046, 0.6071)
13074 -- (-0.5747, 0.5723)
13075 -- (-0.6210, 0.5326)
13076 -- (-0.6509, 0.5674)
13077 --cycle
13078 ;
13079 \path[hex/terrain/town/house,pic actions]
13080 (-0.6046, 0.6071)
13081 -- (-0.5747, 0.5723)
13082 -- (-0.6210, 0.5326)
13083 -- (-0.6509, 0.5674)
13084 --cycle
13085 ;
13086 \path[hex/terrain/town/house,pic actions]
13087 (-0.2915,-0.1208)
13088 -- (-0.2462,-0.1288)

```

```

13089  -- (-0.2569,-0.1889)
13090  -- (-0.3021,-0.1809)
13091  --cycle
13092  ;
13093  \path[hex/terrain/town/house,pic actions]
13094  (-0.2915,-0.1208)
13095  -- (-0.2462,-0.1288)
13096  -- (-0.2569,-0.1889)
13097  -- (-0.3021,-0.1809)
13098  --cycle
13099  ;
13100  \path[hex/terrain/town/house,pic actions]
13101  ( 0.1636, 0.0236)
13102  -- ( 0.2095, 0.0215)
13103  -- ( 0.2067,-0.0394)
13104  -- ( 0.1608,-0.0374)
13105  --cycle
13106  ;
13107  \path[hex/terrain/town/house,pic actions]
13108  ( 0.1636, 0.0236)
13109  -- ( 0.2095, 0.0215)
13110  -- ( 0.2067,-0.0394)
13111  -- ( 0.1608,-0.0374)
13112  --cycle
13113  ;
13114  \path[hex/terrain/town/house,pic actions]
13115  (-0.0653,-0.5296)
13116  -- (-0.0423,-0.5269)
13117  -- (-0.0391,-0.5533)
13118  -- (-0.0621,-0.5560)
13119  --cycle
13120  ;
13121  \path[hex/terrain/town/house,pic actions]
13122  (-0.0653,-0.5296)
13123  -- (-0.0423,-0.5269)
13124  -- (-0.0391,-0.5533)
13125  -- (-0.0621,-0.5560)
13126  --cycle
13127  ;
13128  \path[hex/terrain/town/house,pic actions]
13129  (-0.3393, 0.1912)
13130  -- (-0.3173, 0.1843)
13131  -- (-0.3254, 0.1589)
13132  -- (-0.3474, 0.1659)
13133  --cycle
13134  ;
13135  \path[hex/terrain/town/house,pic actions]
13136  (-0.3393, 0.1912)
13137  -- (-0.3173, 0.1843)
13138  -- (-0.3254, 0.1589)
13139  -- (-0.3474, 0.1659)
13140  --cycle
13141  ;

```

```

13142 \path[hex/terrain/town/house,pic actions]
13143 (-0.2247, 0.5875)
13144 -- (-0.2027, 0.5801)
13145 -- (-0.2113, 0.5549)
13146 -- (-0.2332, 0.5623)
13147 --cycle
13148 ;
13149 \path[hex/terrain/town/house,pic actions]
13150 (-0.2247, 0.5875)
13151 -- (-0.2027, 0.5801)
13152 -- (-0.2113, 0.5549)
13153 -- (-0.2332, 0.5623)
13154 --cycle
13155 ;
13156 \path[hex/terrain/town/house,pic actions]
13157 ( 0.3747, 0.1590)
13158 -- ( 0.4022, 0.1690)
13159 -- ( 0.4206, 0.1185)
13160 -- ( 0.3930, 0.1085)
13161 --cycle
13162 ;
13163 \path[hex/terrain/town/house,pic actions]
13164 ( 0.3747, 0.1590)
13165 -- ( 0.4022, 0.1690)
13166 -- ( 0.4206, 0.1185)
13167 -- ( 0.3930, 0.1085)
13168 --cycle
13169 ;
13170 }
13171 }
13172 \fi

```

hex/terrain/mountain

This is an example of a terrain picture.

```

13173 \tikzset{
13174   hex/terrain/mountain/.pic={%
13175     \path[draw=black,fill=white] (0,0) -- (.3,.9)--(.45,0) -- cycle;
13176     \path[draw=black,fill=lightgray,pic actions]
13177       (-.6 ,- .9) --
13178       (-.3 , .3) --
13179       ( 0, 0) --
13180       ( .45, 0) --
13181       ( .6 , -.9) -- cycle;
13182   }
13183 }

```

hex/terrain/tree

```

13184 \tikzset{
13185   hex/terrain/tree/.pic={

```

```

13186 \path[draw,very thick,pic actions]
13187 (-.15,.0)
13188 arc (269:135:.1)
13189 arc (215: 90:.1)
13190 arc (180: 45:.1)
13191 arc (135: 0:.1)
13192 arc ( 90:-45:.1)
13193 arc ( 45:-90:.1)
13194 (-.15,.025)
13195 arc (60:-60:.25)
13196 arc (150:30:.075)
13197 arc (150:30:.075)
13198 arc (150:30:.075)
13199 arc (-120:-240:.25);
13200
13201 }
13202 }

```

5.4.6 Ridges

A hex can be decorated with up to 6 ridges — one for each edge of the hexagon. The first thing is to set up the graphics style to use for the ridges. We use the `wave` decoration.

If rounded corners are set for ridges, (e.g., via `every hex ridges`), then it should be `0pt` or `4pt` (roughly 2mm) or larger. Otherwise, one will get a “dimension too large” error.

```

13203 \tikzset{%
13204   hex/ridges pre/.style={
13205     line cap=round,
13206     draw=pgfstrokecolor,
13207     solid,
13208     /hex/ridges/.cd,%
13209     radius=0.85,%
13210     n=4,
13211     R=.25,
13212   },
13213   hex/ridges/.style={
13214     get scale,
13215     decoration={
13216       path has corners=true,
13217       waves,
13218       radius=\wg@scale\hex@r@R,
13219       segment length=\wg@scale\hex@r@s,
13220     },
13221     decorate}}

```

To properly set up the ridges, we need to concatenate ridge paths in order. To facilitate that, we define 6 `\ifs` — one for each edge.

```

13222 \newif\ifhex@r@ne
13223 \newif\ifhex@r@n
13224 \newif\ifhex@r@nw
13225 \newif\ifhex@r@sw
13226 \newif\ifhex@r@s

```

```
13227 \newif\ifhex@r@se
```

Next is the keys for each edge. These will set the above \ifs to true. We put these into the family /hex/r so that we can parse them separately.

```
13228 \tikzset{%
13229 /hex/ridges/.search also={/tikz},
13230 /hex/ridges/.cd,
13231 north east/.is if=hex@r@ne,
13232 north/.is if=hex@r@n,
13233 north west/.is if=hex@r@nw,
13234 south west/.is if=hex@r@sw,
13235 south/.is if=hex@r@s,
13236 south east/.is if=hex@r@se,
13237 radius/.store in=\hex@r@r,
13238 curve radius/.store in=\hex@r@w,
13239 NE/.is if=hex@r@ne,
13240 N/.is if=hex@r@n,
13241 NW/.is if=hex@r@nw,
13242 SW/.is if=hex@r@sw,
13243 S/.is if=hex@r@s,
13244 SE/.is if=hex@r@se,
13245 r/.store in=\hex@r@r,
13246 n/.store in=\hex@r@n,
13247 R/.store in=\hex@r@w,
13248 }
```

\hex@do@ridges

This is the macro that actually generates the ridge. We use the same PGF filtered key parsing trick as above. Note that the routine below is handcrafted since it is relatively simple.

```
13249 \newdimen\hex@r@s
13250 \newdimen\hex@r@R
13251 \def\hex@do@ridges{%
13252 \edef\hex@r@tmp{[
13253 hex/ridges pre,
13254 /tikz/every hex ridges/.try,
13255 \hex@ridges]}
13256 \expandafter\scope\hex@r@tmp%
13257 \hex@dbg{3}{Ridges: '\meaning\hex@ridges', '\meaning\hex@r@tmp'}
13258 ^^Jnorth east=\ifhex@r@ne yes\else no\fi
13259 ^^Jnorth =\ifhex@r@n yes\else no\fi
13260 ^^Jnorth west=\ifhex@r@nw yes\else no\fi
13261 ^^Jsouth west=\ifhex@r@sw yes\else no\fi
13262 ^^Jsouth =\ifhex@r@s yes\else no\fi
13263 ^^Jsouth east=\ifhex@r@se yes\else no\fi
13264 ^^Jradius =\hex@r@r
13265 ^^Jn =\hex@r@n
13266 }
13267 \pgfmathparse{\hex@r@r/\hex@r@n}\xdef\hex@r@t{\pgfmathresult}
13268 \hex@r@s=\hex@r@t cm
13269 \hex@r@R=\hex@r@w cm
```

```

13270 \def\hex@r@p{}
13271 % Hand written algorithm
13272 \ifhex@r@ne
13273   \ifhex@r@se
13274     \xdef\hex@r@p{(0:\hex@r@r)--(60:\hex@r@r)}
13275   \else
13276     \xdef\hex@r@p{($ (0:\hex@r@r)+(-60:\hex@r@t/2)$)--(60:\hex@r@r)}
13277   \fi
13278   \hex@dbg{4}{Ridge along north east edge: '\hex@r@p'}
13279 \fi
13280 \ifhex@r@n
13281   \ifhex@r@ne\else
13282     \xdef\hex@r@p{\hex@r@p ($ ( 60:\hex@r@r)+(0:\hex@r@t/2)$)}
13283   \fi
13284   \xdef\hex@r@p{\hex@r@p --(120:\hex@r@r)}
13285   \hex@dbg{4}{Ridge along north edge: '\hex@r@p'}
13286 \fi
13287 \ifhex@r@nw
13288   \ifhex@r@n\else
13289     \xdef\hex@r@p{\hex@r@p ($ (120:\hex@r@r)+(60:\hex@r@t/2)$)}
13290   \fi
13291   \xdef\hex@r@p{\hex@r@p --(180:\hex@r@r)}
13292   \hex@dbg{4}{Ridge along north west: '\hex@r@p'}
13293 \fi
13294 \ifhex@r@sw
13295   \ifhex@r@nw\else
13296     \xdef\hex@r@p{\hex@r@p ($ (180:\hex@r@r)+(120:\hex@r@t/2)$)}
13297   \fi
13298   \ifhex@r@s
13299     \xdef\hex@r@p{\hex@r@p --(240:\hex@r@r)}
13300   \else
13301     \xdef\hex@r@p{\hex@r@p --(240:\hex@r@r)}
13302   \fi
13303   \hex@dbg{4}{Ridge along south west: '\hex@r@p'}
13304 \fi
13305 \ifhex@r@s
13306   \ifhex@r@sw\else
13307     \xdef\hex@r@p{\hex@r@p ($ (240:\hex@r@r)+(-\hex@r@t/2,0)$)}
13308   \fi
13309   \ifhex@r@se
13310     \xdef\hex@r@p{\hex@r@p --(300:\hex@r@r)}
13311   \else
13312     \xdef\hex@r@p{\hex@r@p --(300.5:\hex@r@r)}
13313   \fi
13314   \hex@dbg{4}{Ridge along south: '\hex@r@p'}
13315 \fi
13316 \ifhex@r@se
13317   \ifhex@r@s\else
13318     \xdef\hex@r@p{\hex@r@p ($ (300:\hex@r@r)+(-120:\hex@r@t/2)$)}
13319   \fi
13320   \ifhex@r@ne
13321     %\xdef\hex@r@p{\hex@r@p --cycle}
13322   \xdef\hex@r@p{\hex@r@p -- (0:\hex@r@r)}

```

```

13323     \else
13324         \xdef\hex@r@p{\hex@r@p --(.5:\hex@r@r)}
13325     \fi
13326     \hex@dbg{4}{Ridge along south east: '\hex@r@p'}
13327 \fi
13328 \hex@dbg{3}{ Ridges path: \hex@r@p}
13329 % \draw[red] \hex@r@p;
13330 \draw[hex/ridges] \hex@r@p;
13331 \endscope% End of ridges scope
13332 }

```

5.4.7 Towns

Similar to above, we define a namespace and family for towns. First thing is the graphics style for towns.

```

13333 \tikzset{%
13334   hex/town/.style={
13335     scale line widths,
13336     solid,
13337     thin,
13338     fill=pgfstrokecolor,
13339     color=pgfstrokecolor},
13340   hex/town name/.style={
13341     transform shape,
13342     shape=rectangle,
13343     above right=.1,
13344     color=pgfstrokecolor,
13345     font=\sffamily\fontsize{11}{13}\selectfont}
13346 }

```

Next is the namespace for dealing with towns.

```

13347 \tikzset{%
13348   /hex/town/.search also={/tikz},%
13349   /hex/town/.cd,
13350   pic/.store in=\hex@c@pic,
13351   type/.store in=\hex@c@pic,
13352   place/.store in=\hex@c@pos,
13353   location/.store in=\hex@c@pos,
13354   name/.store in=\hex@c@name,
13355   village/.style={pic=hex/town/village},
13356   town/.style={pic=hex/town/town},
13357   city/.style={pic=hex/town/city}
13358 }

```

And some pictures for making the towns.

```

13359 \tikzset{%
13360   hex/town/village/.pic={\path[fill,solid,pic actions] circle(.1);},
13361   hex/town/town/.pic={\path[fill,solid,pic actions] circle(.2);},
13362   hex/town/city/.pic={%
13363     \path[fill,solid,pic actions] circle(.25);
13364     \path[draw,solid,pic actions] circle(.35);}
13365 }

```

`\hex@do@town`

The macro to make the towns. This uses same tricks as above.

```
13366 \def\hex@c@nameparse{%
13367   \@ifnextchar[{\hex@c@namep@rse}{\hex@c@namep@rse[]}%]
13368 }
13369 \def\hex@c@namep@rse[#1]#2\endhex@c@nameparse{%
13370   \def\hex@c@node{node[shape=rectangle,hex/town name,#1]{#2}}
13371
13372 \def\hex@do@town{%
13373   \edef\hex@c@tmp{[
13374     /hex/town/.cd,%
13375     town,%
13376     /tikz/hex/town,%
13377     /tikz/every hex town/.try,
13378     \hex@town]}
13379   \expandafter\scope\hex@c@tmp%
13380     \ifx\hex@c@pic\empty\else%
13381       \@ifundefined{hex@c@pos}{\let\hex@c@pos\empty}{ }
13382       \@ifundefined{hex@c@name}{\let\hex@c@name\empty}{ }
13383       \expandafter\hex@c@nameparse\hex@c@name\endhex@c@nameparse%
13384       \ifx\hex@c@pos\empty\def\hex@c@pos{(0,0)}\fi
13385       \hex@dbg{2}{Town:
13386         ^^J text=\hex@c@name
13387         ^^J pic=\hex@c@pic
13388         ^^J place=\hex@c@pos
13389         ^^J node=\hex@c@node
13390       }
13391       \filldraw \hex@c@pos pic{\hex@c@pic} \hex@c@node;
13392     \fi%
13393   \endscope%
13394 }
```

5.4.8 Labels

Like terrains, we will set up some macros for dealing with labels.

To process coordinates and turn them into labels, we set up two counters.

```
13395 \newcounter{hex@l@c}
13396 \newcounter{hex@l@r}
```

In case we want to invert the row axis, we set-up a key to set the maximum row number.

```
13397 \def\hex@max@row{-1}
13398 \tikzset{
13399   max hex row/.store in=\hex@max@row,
13400 }
```

Again, we will make a separate namespace/family for the handling labels. We also define a counter which we will use to typeset alphabetic column numbers.

First a graphics style.

```

13401 \tikzset{%
13402   hex/label/.style={%
13403     draw=none,%
13404     shape=rectangle,%
13405     anchor=north,%
13406     color=gray,%
13407     font=\sffamily\bfseries\scriptsize,%
13408     inner sep=0},
13409 }

```

Next, the choices of how to make a label. These are put in the `/hex/label` family to make it easy to parse out only these keys. This uses some macros defined below. Note, this uses the macros `\hex@col` and `\hex@row` defined by the hex coordinate system. *Important:* If you do not want to set a label but they are otherwise automatically added, then set `label=none` rather than `label=` (empty), which will not work.

```

13410 \tikzset{%
13411   /hex/label/.search also={/tikz},
13412   /hex/label/.cd,
13413   none/.code={\global\let\hex@l@text\@empty},
13414   auto/.is choice,
13415   auto/none/.code={\global\let\hex@l@text\@empty},
13416   auto/numbers/.code={%
13417     \hex@l@abs%
13418     \xdef\hex@l@text{%
13419       \hex@l@n@pad{\the\c@hex@l@c}%
13420       \hex@l@n@pad{\the\c@hex@l@r}}},
13421   auto/alpha column/.code={%
13422     \xdef\hex@l@text{%
13423       \ifnum>\hex@col\AlphaAlph{-\hex@col}\else\AlphaAlph{\hex@col}\fi%
13424       \hex@row}},
13425   auto/alpha 2 column/.code={%
13426     \hex@l@abs%
13427     \advance\c@hex@l@c27\relax%
13428     \xdef\hex@l@text{%
13429       \AlphaAlph{\value{\hex@l@c}}%
13430       \hex@l@n@pad{\hex@row}},
13431   auto/inv y x plus 1/.code={%
13432     \hex@dbg{3}{Inverse row, add one to column with arg '#1'}
13433     \let\hex@l@text\@empty%
13434     \ifnum\hex@max@row>0%
13435       \pgfmathtruncatemacro{\hex@l@row}{\hex@max@row-\hex@row}
13436       \pgfmathtruncatemacro{\hex@l@col}{1+\hex@col}
13437       \xdef\hex@l@text{%
13438         \hex@l@n@pad{\hex@l@col}%
13439         \hex@l@n@pad{\hex@l@row}}
13440     \else\message{Max row number not set}\fi},
13441   auto/x and y plus 1/.code={%
13442     \hex@dbg{3}{Inverse row, add one to column with arg '#1'}
13443     \pgfmathtruncatemacro{\hex@l@row}{1+\hex@row}
13444     \pgfmathtruncatemacro{\hex@l@col}{1+\hex@col}
13445     \xdef\hex@l@text{%
13446       \hex@l@n@pad{\hex@l@col}%

```

```

13447     \hex@l@n@pad{\hex@l@row}},
13448 auto/.default=numbers,
13449 %text/.store in=\hex@l@text,
13450 text/.code={\gdef\hex@l@text{#1}},
13451 place/.store in=\hex@l@pos,
13452 location/.forward to=/hex/label/place,
13453 rotate/.store in=\hex@l@rot
13454 }

```

\hex@l@abs

This takes the absolute value of row and column numbers.

```

13455 \def\hex@l@abs{
13456   \setcounter{hex@l@c}{\hex@col}
13457   \setcounter{hex@l@r}{\hex@row}
13458   \expandafter\ifnum\value{hex@l@c}<0\multiply\c@hex@l@c by-1\fi%
13459   \expandafter\ifnum\value{hex@l@r}<0\multiply\c@hex@l@r by-1\fi%
13460   % \hex@dbg{0}{\hex@col->\the\c@hex@l@c\space\hex@row->\the\c@hex@l@r}
13461 }

```

\hex@l@n@pad

This will pad a number with a 0 if the number is smaller than 10.

```

13462 \long\def\hex@l@n@pad#1{%
13463   \ifnum#1<10 0\fi%
13464   #1}

```

\hex@do@label

This macro puts in the label. First, we reset label keys, then we read in the keys from the argument. If this results in the macro `\hex@l@text` to be non-empty, then we set the label via a TikZ node.

```

13465 \def\hex@do@label{%
13466   \hex@dbg{3}{Hex label: '\meaning\hex@label'}%
13467   \edef\hex@l@tmp{[%
13468     /hex/label/.cd,%
13469     rotate=0,%
13470     place={(90:.8)},%
13471     /tikz/hex/label/.try,%
13472     /tikz/every hex label/.try,%
13473     \hex@label]}%
13474   \expandafter\scope\hex@l@tmp%
13475   \hex@dbg{1}{Label:
13476     ^^J Text: '\meaning\hex@l@text'
13477     ^^J Location: '\meaning\hex@l@pos'
13478     ^^J Rotation: '\meaning\hex@l@rot'
13479   }%
13480   \@ifundefined{hex@l@text}{\let\hex@l@text\empty}{}%
13481   \ifx\hex@l@text\empty\else%

```

```

13482 \node[rotate=\hex@l@rot] at \hex@l@pos {\hex@l@text};%
13483 \fi%
13484 \endscope%
13485 }

```

5.4.9 Extra graphics

To make the interface a bit more flexible we allow for adding arbitrary stuff to the hexes. Some examples of pictures to add in the `extra` stuff.

hex/fortress

Draw a fortress. An example of a extra graphics entity.

```

13486 \tikzset{%
13487   hex/fortress/.pic={
13488     \path[draw,solid,pic actions]
13489       (0: .9) --
13490       (0: .7) --
13491       (60: .7) -- ( 60:.9) -- ( 60:.7) --
13492       (120:.7) -- (120:.9) -- (120:.7) --
13493       (180:.7) -- (180:.9) -- (180:.7) --
13494       (240:.7) -- (240:.9) -- (240:.7) --
13495       (300:.7) -- (300:.9) -- (300:.7) --
13496       (0: .7) -- cycle;}}

```

hex/fortress 2

Draw a fortress. An example of a extra graphics entity.

```

13497 \tikzset{
13498   hex/fortress 2/.pic={%
13499     \draw[pic actions,transform shape] (0:0.64)
13500     foreach \a in {15,45,...,345}{
13501       --(\a:0.64)
13502       --(\a:0.80)
13503       --(\a+15:0.80)
13504       --(\a+15:0.64)}
13505     --cycle;
13506   },
13507 }

```

5.4.10 Some macros

```

13508 \DeclareRobustCommand\fortmark[1][scale=.25]{\tikz[#1,transform shape]{%
13509   \pic{hex/fortress 2}}}
13510 \providecommand\terrainmark[2][scale=.2]{%
13511   \tikz[#1]{\hex[label=,terrain=#2]}}
13512 \providecommand\clearhex[1][scale=.2]{\tikz[#1]{\hex[label=]}}
13513 \providecommand\woodshex[1][scale=.2]{\terrainmark[#1]{woods}}

```

```

13514 \providecommand\mountainhex[1][scale=.2]{\terrainmark[#1]{mountains}}
13515 \providecommand\cityhex[1][scale=.2]{\terrainmark[#1]{city}}
13516 \providecommand\beachhex[1][scale=.2]{\terrainmark[#1]{beach}}
13517 \providecommand\seahex[1][scale=.2]{\tikz[#1]{\hex[label=,fill=sea]}}
13518 \providecommand\riverhex[1][scale=.2]{%
13519   \tikz[#1]{%
13520     \hex[label=](c=0,r=0)%
13521     \river[](\hex cs:e=SW)--(\hex cs:e=NE);}}
13522 \providecommand\roadhex[1][scale=.2]{%
13523   \tikz[#1]{%
13524     \hex[label=](c=0,r=0)%
13525     \road(\hex cs:e=SW)--(\hex cs:e=NE);}}

```

5.4.11 Edges, borders, roads, rivers, and so on

Styles of drawing edges, borders, rivers, roads, and railroads.

```

13526 % A decoration to extract outline of a path
13527 \pgfdeclaredecoration{outline}{init}
13528 {%
13529   \state{init}[next state=tick,width=0pt]{
13530     \xdef\outlinerev{}}
13531   \state{tick}{%
13532     width=+\pgfdecorationsegmentlength}%
13533   {
13534     \pgfpathlineto{\pgfpointadd{\pgfpointorigin}{
13535       \pgfpointpolar{\pgfdecorationsegmentangle}{
13536         +\pgfdecorationsegmentamplitude}}}
13537     \pgf@xa=\pgf@x
13538     \pgf@ya=\pgf@y
13539     \message{^^J\the\pgf@x,\the\pgf@y}
13540     \pgfpointadd{\pgfpointorigin}{
13541       \pgfpointpolar{-\pgfdecorationsegmentangle}{
13542         \pgfdecorationsegmentamplitude}}
13543     \pgfpointtransformed{\pgfpoint{\pgf@x}{\pgf@y}}%
13544     \message{^^J\the\pgf@x,\the\pgf@y}
13545     \xdef\outlinerev{\the\pgf@x/\the\pgf@y,\outlinerev}
13546     \pgf@x=\pgf@xa
13547     \pgf@y=\pgf@ya
13548   }%
13549   \state{final}
13550   {
13551     \pgfpathlineto{\pgfpointdecoratedpathlast}
13552     \foreach \x/\y in \outlinerev{
13553       \ifx\x\empty\else
13554         \ifx\y\empty\else
13555           \pgf@xa=\x
13556           \pgf@ya=\y
13557           \pgf@nlt@lineto{\pgf@xa}{\pgf@ya}
13558         \fi
13559       \fi
13560     }
13561   }%
13562 }%

```

A decoration to make a fortification line

```
13563 \pgfdeclaredecoration{fortification}{initial}
13564 {
13565   \state{initial}[width=4\pgflinewidth]
13566   {
13567     \pgfpathlineto{\pgfpoint{2\pgflinewidth}{0}}
13568     \pgfpathlineto{\pgfpoint{2\pgflinewidth}{2\pgflinewidth}}
13569     \pgfpathlineto{\pgfpoint{4\pgflinewidth}{2\pgflinewidth}}
13570     \pgfpathlineto{\pgfpoint{4\pgflinewidth}{0}}
13571   }
13572   \state{final}
13573   {
13574     \pgfpathlineto{\pgfpointdecoratedpathlast}
13575   }
13576 }
```

Roads, railroads, rivers, borders.

```
13577 \tikzset{
13578   hex/road/.style={
13579     rounded corners=3\pgflinewidth,% .25cm,
13580     color=black,
13581     transform shape,
13582     scale line widths,
13583     thick,
13584     every hex road/.try,
13585   },
13586   hex/railroad/.style={
13587     %scale line widths,
13588     rounded corners=.25cm,
13589     color=gray!50!black,
13590     transform shape,
13591     every hex railroad/.try,
13592     postaction={draw,decorate},
13593     decoration={ticks,
13594       segment length=9\pgflinewidth,
13595       amplitude=3\pgflinewidth,% .1cm
13596     }
13597   },
13598   hex/river/.style={
13599     color=blue,
13600     scale line widths,
13601     scale rounded corners,
13602     line width=3pt,
13603     transform shape,
13604     every hex river/.try,
13605     decorate,
13606     decoration={random steps,
13607       segment length=3\pgflinewidth,
13608       amplitude=1.5\pgflinewidth,
13609       pre=lineto,
13610       post=lineto,
13611       pre length=.5\pgflinewidth,
```

```

13612     post length=.5\pgflinewidth},
13613     rounded corners=.75\pgflinewidth},
13614 hex/border/.style={
13615     color=gray,
13616     dashed,
13617     transform shape,
13618     scale line widths,
13619     very thick,
13620     rounded corners=3\pgflinewidth,
13621     every hex border/.try
13622 },
13623 %
13624 % Fortification line
13625 %
13626 hex/fortified line/.style={
13627     draw=brown!50!black,
13628     scale line widths,
13629     line width=2pt,
13630     every hex fortification line/.try,
13631     decoration={fortification,raise=-2\pgflinewidth},
13632     decorate},
13633 % every river/.style={},
13634 % every road/.style={},
13635 % every railroad/.style={},
13636 % every border/.style={},
13637 }

```

```

\road
\railroad
\river
\border

```

```

13638 \def\road{%
13639   %\hex@dbg{3}{Road}
13640   \@ifnextchar[{\road@}{\road@[]}%]
13641 }
13642 \def\road@[#1]{\draw[hex/road,every hex road/.try,#1]}
13643 \def\railroad{%
13644   %\hex@dbg{3}{Rail road}
13645   \@ifnextchar[{\railroad@}{\railroad@[]}%]
13646 }
13647 \def\railroad@[#1]{\draw[hex/railroad,every hex railroad/.try,#1]}
13648 \def\river{%
13649   %\hex@dbg{3}{River}
13650   \@ifnextchar[{\river@}{\river@[]}%]
13651 }
13652 \def\river@[#1]{\draw[hex/river,#1]}
13653 \def\border{%
13654   %\hex@dbg{3}{Border}
13655   \@ifnextchar[{\border@}{\border@[]}%]
13656 }
13657 \def\border@[#1]{\draw[hex/border,every hex border/.try,#1]}

```

```

13658 \def\fortifiedline{%
13659   \@ifnextchar[{\fortifiedline@}{\fortifiedline@[]}%
13660 }%
13661 \def\fortifiedline@[#1]{%
13662   \draw[hex/fortified line,every hex fortified line/.try,#1]}

```

5.4.12 Other paths

`\shiftScalePath`

Shifts and scales a path and defines a macro to contain the path

`\shiftScalePath{<macro>}{<relative-coordinates>}`

where *<relative-coordinates>* is a comma separated list of relative coordinates (to the lower-left and upper-right corners)

<x>/<y>

Note, this requires that `\boardXmin`, `\boardYmin` and `\boardXmax`, `\boardYmax` is defined. This can be done using the `\boardframe` macro.

```

13663 \def\shiftScalePath#1#2{%
13664   \let\tmp@path\@undefined%
13665   \foreach \x/\y in {#2}{%
13666     \pgfmathparse{\x*\boardW+\boardXmin}\xdef\tmp@x{\pgfmathresult}%
13667     \pgfmathparse{\y*\boardH+\boardYmin}\xdef\tmp@y{\pgfmathresult}%
13668     \@ifundefined{tmp@path}{\def\tmp@path{}}{\xdef\tmp@path{\tmp@path--}}%
13669     \xdef\tmp@path{\tmp@path(\tmp@x,\tmp@y)}%
13670   \expandafter\xdef\csname #1\endcsname{\tmp@path}}

```

5.4.13 Move, attacks, retreats from hex to hex

`\hex@getscale`

Get current scaling factor.

```

13671 \def\hex@getscale#1{%
13672   \begingroup
13673   \pgfgettransformentries{%
13674     \scaleA}{%
13675     \scaleB}{%
13676     \scaleC}{%
13677     \scaleD}{%
13678     \whatevs}{%
13679     \whatevs}%
13680   \pgfmathsetmacro{#1}{sqrt(abs(\scaleA*\scaleD-\scaleB*\scaleC))}%
13681   \expandafter
13682   \endgroup
13683   \expandafter\def\expandafter#1\expandafter{#1}%
13684 }

```

Key to get the scale

```

13685 \tikzset{%
13686   hex/get scale/.code={
13687     \hex@getscale{\hex@scale}},
13688 }

```

Style for moves. Use like

```
\path[move] <coordinates>;
```

```

13689 \tikzset{%
13690   % Argument is colour
13691   hex/move/.style={
13692     hex/get scale,
13693     decorate,
13694     decoration={
13695       markings,
13696       mark=between positions 0 and 1 step 0.75*\hex@scale*\hex@dy with {
13697         \node [single arrow,
13698           single arrow head extend=.1*\hex@scale*\hex@dy,
13699           fill=#1,
13700           inner sep=0.05*\hex@scale*\hex@dy,
13701           minimum width=0.02*\hex@scale*\hex@dy,
13702           minimum height=\hex@scale*\hex@dy/2,
13703           transform shape]{};
13704       }
13705     },
13706   },

```

A short move style

```
\path[short move] <coordinates>;
```

```

13707   % Argument is colour
13708   hex/short move/.style={
13709     hex/get scale,
13710     decorate,
13711     decoration={
13712       markings,
13713       mark=between positions 0 and 1 step 0.5*\hex@scale*\hex@dy with {
13714         \node [single arrow,
13715           single arrow head extend=.1*\hex@scale*\hex@dy,
13716           fill=#1,
13717           inner sep=0.05*\hex@scale*\hex@dy,
13718           minimum width=0.02*\hex@scale*\hex@dy,
13719           minimum height=\hex@scale*\hex@dy/3,
13720           transform shape]{};
13721       }
13722     },
13723   },

```

A short move style

```
\path[long move] <coordinates>;
```

```

13724   % Argument is colour

```

```

13725 hex/long move/.style={
13726   hex/get scale,
13727   transform shape,
13728   decorate,
13729   decoration={
13730     markings,
13731     mark=between positions 0 and -.7*\hex@scale*\hex@dy
13732     step 2*\hex@scale*\hex@dy with {
13733       \node [single arrow,
13734         single arrow head extend=3pt,
13735         fill=#1,
13736         anchor=west,
13737         inner sep=\hex@scale*.25mm,
13738         outer sep=.3*\hex@scale*\hex@dy,
13739         minimum width=0.02*\hex@scale*\hex@dy,
13740         minimum height=1.4*\hex@scale*\hex@dy,
13741         transform shape]{};
13742     }
13743   },
13744 },

```

A short move style

```
\path[move with start] <coordinates>;
```

```

13745 % Argument is colour
13746 hex/move with start/.style={
13747   hex/get scale,
13748   decorate,
13749   decoration={
13750     markings,
13751     mark=at position 0 with {
13752       \node [inner sep=0,
13753         circle,
13754         minimum size=\hex@scale*5mm,
13755         fill=#1,
13756         transform shape] {};},
13757     mark=between positions 0 and 1 step 0.75*\hex@scale*\hex@dy with {
13758       \node [single arrow,
13759         single arrow head extend=.1*\hex@scale*\hex@dy,
13760         fill=#1,
13761         inner sep=0.05*\hex@scale*\hex@dy,
13762         minimum width=0.02*\hex@scale*\hex@dy,
13763         minimum height=\hex@scale*\hex@dy/2,
13764         transform shape]{};
13765     }
13766   },
13767 },
13768 % Default fill colour is black
13769 hex/move/.default=black,
13770 hex/move with start/.default=black,
13771 hex/short move/.default=black,
13772 hex/long move/.default=black,
13773 % Arguments are draw and fill color

```

A move cost style

```
\path[move] ... (coordinate)node[hex/move cost] ...;
```

```
13774 hex/move cost/.style 2 args={
13775     minimum size=1mm,
13776     inner sep=0.1mm,
13777     circle,
13778     fill=#2,
13779     transform shape,
13780     text=#1,
13781     font=\sffamily\bfseries\fontsize{14.4}{17}\selectfont},
13782 hex/move cost/.default={black}{none},
13783 % Argument is fill colour
```

A short line style for retreats, advances, and so on

```
\path[short line] (start)--(end);
```

```
13784 hex/short line/.style={%
13785     hex/get scale,
13786     inherit options/.code={\csname tikz@options\endcsname},
13787     inherit options,
13788     decorate,
13789     decoration={
13790         markings,
13791         mark=between positions \hex@scale*\hex@dy
13792         and 1 step 2*\hex@scale*\hex@dy with {
13793             \node [single arrow,draw=black,fill=#1,
13794                 single arrow head extend=\hex@scale*3pt,
13795                 inner sep=1mm,
13796                 minimum width=0.75*\hex@scale*\hex@dy,
13797                 minimum height=\hex@scale*\hex@dy,
13798                 transform shape]{};
13799         }
13800     },
13801 },
```

An attack indication style

```
\path[attack] (start)--(end);
```

```
13802 % Argument is fill color
13803 hex/attack/.style={
13804     hex/get scale,
13805     inherit options/.code={\csname tikz@options\endcsname},
13806     inherit options,
13807     decorate,
13808     decoration={
13809         markings,
13810         mark=between positions \hex@scale*\hex@dy
13811         and 1 step 2*\hex@scale*\hex@dy with {
13812             \node [regular polygon,
13813                 fill=#1,
13814                 draw=#1,
```

```

13815     regular polygon sides=3,
13816     inner sep=0,
13817     minimum size=0.75*\hex@scale*\hex@dy,
13818     rotate=-90,
13819     transform shape]{};
13820   }
13821 },
13822 },

```

Short hands

```
\path[attack] (start)--(end);
```

```

13823 % Default colour is red for attacks
13824 hex/attack/.default=red!70!black,
13825 %%
13826 hex/retreat/.style={hex/short line=#1},
13827 hex/retreat/.default=white,
13828 %%
13829 hex/advance/.style={hex/short line=#1},
13830 hex/advance/.default={green!70!black},
13831 }

```

5.4.14 Board clipping and frame

```
\boardframe
```

Define the bounding box around the board

```
\boardframe[margin](lower-left)(upper-right)
```

where *lower-left* and *upper-right* specifies the lower left and upper right hexes (inclusive) of the board.

```

13832 \def\boardframe{%
13833   \@ifnextchar[{\boardframe}{\boardframe[0]}%]
13834 }

```

Below is our new implementation of `\boardframe`. This is split into parts.

First, a macro that will define the path around rectangular placed hexes. This takes 4 mandatory arguments: lower left column and row, and upper right column and row, in that order. It also accepts an optional argument. If this is not empty, then it is assumed to be a style to apply, and hexes will be drawn using that style. The style will be passed the hex coordinates and can react accordingly.

```

13835 \def\boardframe@me{
13836   \@ifnextchar[{\boardframe@me@}{\boardframe@me@[]}%]
13837 }
13838 \def\boardframe@me@(#1)#2#3#4#5{
13839   \hex@coords@conv{#1}%
13840   % \hex@dbg{0}{#1 -> '\hex@x', '\hex@y'}
13841   \pgfmathparse{min(#2, \hex@x)}\xdef#2{\pgfmathresult}%
13842   \pgfmathparse{min(#3, \hex@y)}\xdef#3{\pgfmathresult}%
13843   \pgfmathparse{max(#4, \hex@x)}\xdef#4{\pgfmathresult}%
13844   \pgfmathparse{max(#5, \hex@y)}\xdef#5{\pgfmathresult}%

```

```

13845 \hex@dbg{2}{#1 -> ll='#2', '#3', ur='#4', '#5'}%
13846 }
13847 \def\bo@rdfr@me@[#1]#2#3#4#5{%
13848 % Define rtmp and a ctmp to by directions
13849 \pgfmathparse{int(\hex@coords@row@fac)}\edef\rtmp{\pgfmathresult}%
13850 \pgfmathparse{int(\hex@coords@col@fac)}\edef\ctmp{\pgfmathresult}%
13851 % Define vertices for path
13852 \def\ctfv{SW}%
13853 \def\ctsv{SE}%
13854 \def\cbfv{NE}%
13855 \def\cbsv{NW}%
13856 \def\rrfv{E}%
13857 \def\rrsv{NE}%
13858 \def\rlfv{W}%
13859 \def\rlsv{SW}%
13860 % Swap around some definitions based on the row direction
13861 \ifnum\rtmp<0%
13862 \let\max@short\hex@bot@short@col%
13863 \let\min@short\hex@top@short@col%
13864 \let\swp\ctfv\let\ctfv\cbsv\let\cbsv\swp%
13865 \let\swp\ctsv\let\ctsv\cbfv\let\cbfv\swp%
13866 \def\rrsv{SE}%
13867 \def\rlsv{NW}%
13868 \else%
13869 \let\max@short\hex@top@short@col%
13870 \let\min@short\hex@bot@short@col%
13871 \fi%
13872 % Swap around some definitions based on the column direction
13873 \ifnum\ctmp<0%
13874 \let\swp\ctfv\let\ctfv\ctsv\let\ctsv\swp%
13875 \let\swp\cbfv\let\cbfv\cbsv\let\cbsv\swp%
13876 \let\swp\rrfv\let\rrfv\rlsv\let\rlsv\swp%
13877 \let\swp\rrsv\let\rrsv\rlfv\let\rlfv\swp%
13878 \fi%
13879 % Define tmp = 0 if no shorts, 1 if top short, 2 if both
13880 \pgfmathparse{ifthenelse(\hex@got@top@short,
13881 ifthenelse(\hex@got@bot@short,2,1),0)}\edef\tmp{\pgfmathresult}%
13882 % If top-short, set factors
13883 \ifnum\tmp=1%
13884 \def\mnf{-1}%
13885 \def\mxf{-1}%
13886 \def\mnn{}%
13887 \def\mxn{}%
13888 % If both short, set factors
13889 \else\ifnum\tmp=2%
13890 \def\mnf{\rtmp}%
13891 \def\mxf{(-\rtmp)}%
13892 % If inverse rows, set factors
13893 \ifnum\rtmp<0%
13894 \def\mnn{}%
13895 \def\mxn{not}%
13896 \else%
13897 \def\mnn{not}%

```

```

13898     \def\mxn{ }%
13899     \fi%
13900 % If none is short
13901 \else%
13902     \def\mnf{1}%
13903     \def\mxf{1}%
13904     \def\mnn{not}%
13905     \def\mxn{not}%
13906 \fi\fi%
13907 % Define row@mn to give least row of column
13908 \def\row@mn##1{%
13909     \pgfmathparse{int(#3+\mnf*
13910         \hex@coords@row@fac*\min@short(##1)*
13911         \mnn(\min@short(\hex@coords@col@off)))}%
13912     \edef\lr{\pgfmathresult}}%
13913 % Define row@mx to give largest row of column
13914 \def\row@mx##1{%
13915     \pgfmathparse{int(#5+\mxf*
13916         \hex@coords@row@fac*\max@short(##1)*
13917         \mxn(\max@short(\hex@coords@col@off)))}%
13918     \edef\ur{\pgfmathresult}}%
13919 %
13920 %
13921 % Below defines a path around the perimeter of the hexes.
13922 %
13923 \def\@llx{10000}%
13924 \def\@lly{10000}%
13925 \def\@urx{-10000}%
13926 \def\@ury{-10000}%
13927 % Start with an empty path
13928 \def\p{}
13929 % Loop across least row (can be top if \rtmp<0)
13930 \foreach \c in {#2,...,#4}{%
13931     \row@mn{\c}%
13932     \row@mx{\c}%
13933     % \message{^~JColumn: '\c' -> '\lr','\ur' (#3,#5)}
13934 }
13935 \foreach \c in {#2,...,#4}{%
13936     \row@mn{\c}%
13937     \xdef\p{\p
13938         (hex cs:c=\c,r=\lr,v=\ctfv)--
13939         (hex cs:c=\c,r=\lr,v=\ctsv)--}%
13940     \bo@rdrf@me@u(c=\c,r=\lr,v=\ctfv)\@llx\@lly\@urx\@ury%
13941     \bo@rdrf@me@u(c=\c,r=\lr,v=\ctsv)\@llx\@lly\@urx\@ury%
13942 }%
13943 % Go up (down if \rtmp<0) right side
13944 \row@mn{#4}%
13945 \row@mx{#4}%
13946 \foreach \r in {\lr,...,\ur}{%
13947     \xdef\p{\p
13948         (hex cs:c=#4,r=\r,v=\rrfv)--
13949         (hex cs:c=#4,r=\r,v=\rrsv)--}%
13950     \bo@rdrf@me@u(c=#4,r=\r,v=\rrfv)\@llx\@lly\@urx\@ury%

```

```

13951 \bo@rdfr@me@c=#4,r=\r,v=\rrsv)\@llx\@lly\@urx\@ury%
13952 }%
13953 % Go across largest row (can be bottom if \rtmp<0)
13954 \foreach \c in {#4,...,#2}{%
13955 \row@mx{\c}%
13956 % \message{^^JColumn: '\c', max: '\ur'}
13957 \xdef\p{\p
13958 (hex cs:c=\c,r=\ur,v=\cbfv)--
13959 (hex cs:c=\c,r=\ur,v=\cbsv)--}%
13960 \bo@rdfr@me@c=\c,r=\ur,v=\cbfv)\@llx\@lly\@urx\@ury%
13961 \bo@rdfr@me@c=\c,r=\ur,v=\cbsv)\@llx\@lly\@urx\@ury%
13962 }
13963 % Go up (down if \rtmp<0) left side.
13964 \row@mn{#2}%
13965 \row@mx{#2}%
13966 \foreach \r in {\ur,...,\lr}{%
13967 \xdef\p{\p
13968 (hex cs:c=#2,r=\r,v=\rlfv)--
13969 (hex cs:c=#2,r=\r,v=\rlsv)--}%
13970 \bo@rdfr@me@c=#2,r=\r,v=\rlfv)\@llx\@lly\@urx\@ury%
13971 \bo@rdfr@me@c=#2,r=\r,v=\rlsv)\@llx\@lly\@urx\@ury%
13972 }%
13973 % End path with cycle
13974 \edef\p{\p cycle}%
13975 % Define global path
13976 \global\let\hex@board@path\p%
13977 \hex@dbg{3}{Hex board path: '\meaning\hex@board@path'}%
13978 % If an optional argument was given, then use that to actually make
13979 % hexes.
13980 \ifx|#1|\else%
13981 \foreach[count=\nc] \c in {#2,...,#4}{%
13982 \row@mn{\c}%
13983 \row@mx{\c}%
13984 \foreach \r in {\lr,...,\ur}{%
13985 \hex[#1={\c,\r}](c=\c,r=\r)%
13986 }%
13987 }%
13988 \fi%
13989 }%

```

This is a no operations style used as default for the macro `\boardhexes` below.

```

13990 \tikzset{%
13991 /hex/board/no op/.style args={#1,#2}{}}%

```

This macro will make the actual hexes using the specified, optional, style. It builds on `\bo@rdfr@me` above.

```

13992 \def\boardhexes{%
13993 \@ifnextchar[{\bo@rdhexes}{\bo@rdhexes[board/no op]}%
13994 }%
13995 \def\bo@rdhexes[#1](#2)(#3){%
13996 \hex@coords@conv{#2}%
13997 \edef\llc{\hex@col}%
13998 \edef\llr{\hex@row}%

```

```

13999 \hex@coords@conv{#3}%
14000 \edef\urc{\hex@col}%
14001 \edef\urr{\hex@row}%
14002 \bo@rdfr@me[#1]{\llc}{\llr}{\urc}{\urr}}%

```

Creates a board frame using `\bo@rdfr@me`.

```

14003 \tikzset{board frame bb/.code={
14004   \pgfkeys{
14005     %/tikz/local bounding box=tmp board frame,
14006     /tikz/transform shape,
14007     /tikz/execute at end scope={%
14008       % \hex@dbg{1}{Getting board frame BB}
14009       %\wg@get@bb{tmp board frame}
14010       \global\let\llx\@llx
14011       \global\let\lly\@lly
14012       \global\let\urx\@urx
14013       \global\let\ury\@ury
14014       % \hex@dbg{0}{Board bounding box (\llx,\lly)x(\urx,\ury)}
14015     }}}
14016
14017 \def\bo@rdframe[#1](#2)(#3){%
14018   \hex@coords@conv{#2}%
14019   \edef\llc{\hex@col}%
14020   \edef\llr{\hex@row}%
14021   %
14022   \hex@coords@conv{#3}
14023   \edef\urc{\hex@col}%
14024   \edef\urr{\hex@row}%
14025   %
14026   \def\margin{#1}%
14027   %
14028   % This will store the bounding box in tmp node 'board frame'
14029   \bo@rdfr@me{\llc}{\llr}{\urc}{\urr}%
14030   \begin{scope}[board frame bb]%
14031     \expandafter\path\hex@board@path;%
14032   \end{scope}%
14033   \hex@dbg{1}{Board frame LL: -> '\llx','\lly'}%
14034   \pgfmathparse{\llx+ifthenelse(\llx<0,-1,1)*\margin}\edef\llx{\pgfmathresult}%
14035   \pgfmathparse{\lly+ifthenelse(\lly<0,-1,1)*\margin}\edef\lly{\pgfmathresult}%
14036   %
14037   \hex@dbg{1}{Board frame UR: -> '\urx','\ury'}%
14038   \pgfmathparse{\urx+ifthenelse(\urx<0,-1,1)*\margin}\edef\urx{\pgfmathresult}%
14039   \pgfmathparse{\ury+ifthenelse(\ury<0,-1,1)*\margin}\edef\ury{\pgfmathresult}%
14040   %
14041   \pgfmathparse{\urx-\llx}\edef\w{\pgfmathresult}%
14042   \pgfmathparse{\ury-\lly}\edef\h{\pgfmathresult}%
14043   %% Print to the log
14044   \hex@dbg{0}{Board Frame: (\llx,\lly)x(\urx,\ury) (\w x\h) (\llc,\llr)x(\urc,\urr)}%
14045   %% Possibly draw
14046   \draw[hex/board frame/.try](\llx,\lly) rectangle(\urx,\ury);%
14047   %% Store macros
14048   \xdef\boardXmin{\llx}%
14049   \xdef\boardYmin{\lly}%

```

```

14050 \xdef\boardXmax{\urx}%
14051 \xdef\boardYmax{\ury}%
14052 \@ifnextchar;{\@gobble}{}%
14053 }

```

\boardclip

Clip the board to not show incomplete hexes

\boardclip{<nx>}{<ny>}{<preaction>}

```

14054 \def\boardpath(#1)(#2){%
14055   \hex@coords@reset%
14056   \tikzset{/hex/coords/.cd, #1}%
14057   \edef\llc{\hex@col}%
14058   \edef\llr{\hex@row}%
14059   %%
14060   \hex@coords@reset%
14061   \tikzset{/hex/coords/.cd, #2}%
14062   \edef\urc{\hex@col}%
14063   \edef\urr{\hex@row}%
14064   % This will store the bounding box in tmp node 'board frame'
14065   \bo@rdfr@me{\llc}{\llr}{\urc}{\urr}%
14066   %% Use the path to extract the bounding box
14067   %\begin{scope}[local bounding box=board frame]
14068   % \expandafter\path\hex@board@path;
14069   %\end{scope}
14070   \global\let\hexboardpath\hex@board@path%
14071   \@ifnextchar;{\@gobble}{}%
14072 }
14073

14074 \def\boardclip(#1)(#2)#3{%
14075   \boardpath(#1)(#2)%
14076   \draw \ifx|#3|\else[preaction=#3]\fi%
14077   [clip] \hexboardpath;%
14078 }
14079

```

\debuggrid

Show a debug grid. This requires \boardframe.

```

14080 \def\debuggrid{%
14081   \foreach \i in {0,0.1,0.2,0.3,0.4,0.5,0.6,0.7,0.8,0.9,1} {%
14082     \pgfmathparse{\i*\boardW+\boardXmin}%
14083     \edef\debug@x{\pgfmathresult}%
14084     \draw [very thin,gray](\debug@x,\boardYmin) --
14085     (\debug@x,\boardYmax) node [below,rotate=90] at
14086     (\debug@x,\boardYmin) {\i}; }%
14087   \foreach \i in {0,0.1,0.2,0.3,0.4,0.5,0.6,0.7,0.8,0.9,1} {%
14088     \pgfmathparse{\i*\boardH+\boardYmin}%

```

```

14089 \edef\debug@x{\pgfmathresult}%
14090 \draw [very thin,gray] (\boardXmin,\debug@x) --
14091 (\boardXmax,\debug@x) node [left,rotate=90] at
14092 (\boardXmin,\debug@x) {\$i\$}; } }

```

Some dummy styles. These will be defined by the export class to facilitate getting information from the board.

```

14093 \tikzset{%
14094   zoned/.style={},
14095   zone scope/.style={},
14096   zone path/.style={}
14097 }

```

5.4.15 Board splitting

`\splitboard`

Calculates how to split a board into sheets of paper.

`\splitboard[options]`

where options are

- `paper=format`: Specifies the paper format. One of `a4`, `a3`, `letter`, `tabloid`. Default is `a4`.
- `landscape`: Sets the paper format to be in landscape mode (default is portrait).
- `margin=size in centimetres`: Size of margins on each sheet in centimetres *without* unit. That is put 0.6 for 6mm, *not* 6mm. Default is 0.6. This should be *slightly* larger (by roughly 5%) than the *least* margin required by the printer used. *Must* be given *before* `paper` to have any effect.
- `ncol=number of columns`: Sets the number of columns of sheets.
- `nrow=number of rows`: Set the number of rows of sheets.
- `overlap=size in centimetres`: Sets the size of the overlap between sheets in centimetres *without* unit. That is put 2 for 2cm, *not* 2cm. Default is 2.
- `image=file name`: File name of the board image (a PDF). Default is `board`
- `output=file name`: File name (without `.tex` ending) to write calculated split to.
- `standalone`: Boolean flag. If true, then output file will be a standalone document (i.e., has a `\documentclass`).
- `scale=scale`: Set scale of board.

The macro will produce a file named `\jobname_out.tex` which can be included in another document to generate the split board PDF.

To use, make, for example, the file `calcsplit.tex` with the content

```

\documentclass[11pt]{standalone}
\usepackage{wargame}
\usepackage{mystyle}

```

```

\begin{document}
\splitboard[paper=letter,margin=.7,ncol=2,nrow=2,overlap=1]
\end{document}

```

to calculate the split of board.pdf over 2×2 letter paper sheets, with a non-printable margin of 7mm, and an overlap between the segments of 1cm.

The final split document can then be

```

\documentclass[11pt]{article}
\usepackage[letterpaper,margin=7mm]{geometry}
\begin{document}
\input{calcsplit_out}
\end{document}

```

If you need to scale down the board, define the style board scale. E.g.,

```

\tikzset{board scale/.style={scale=.9}}

```

Styles used for drawing things.

```

14098 \tikzset{%
14099   % Margin must be <1cm
14100   split/paper outline/.style={
14101     shape=rectangle,
14102     draw=red!50!black,
14103     line width=.5mm},
14104   split/effective outline/.style={
14105     shape=rectangle,
14106     draw=green!50!black,
14107     dashed,
14108     line width=.5mm},
14109   split/board outline/.style={%
14110     draw=magenta,
14111     line width=.5mm,
14112     dotted},
14113 }

```

A scratch dimension used

```

14114 \newdimen\split@tmp

```

Get upper right and lower left corners of node. Argument is node name.

```

14115 \def\split@getem#1{%
14116   \draw (#1.north east);%
14117   \pgfgetlastxy{\split@ulx}{\split@uly}%
14118   \xdef\split@ulx{\split@ulx}%
14119   \xdef\split@ulx{\split@ulx}%
14120   \draw (#1.south west);%

```

```

14121 \pgfgetlastxy{\split@lrx}{\split@lry}%
14122 \xdef\split@lrx{\split@lrx}%
14123 \xdef\split@lry{\split@lry}%
14124 }

```

Get board dimensions. Argument is node name.

```

14125 \def\split@getboard#1{%
14126 \split@getem{#1}%
14127 \xdef\split@bulx{\split@ulx}%
14128 \xdef\split@buly{\split@uly}%
14129 \xdef\split@blrx{\split@lrx}%
14130 \xdef\split@blry{\split@lry}%
14131 \split@w{\@percentchar\space Board:
14132 (\split@bulx,\split@buly)(\split@blrx,\split@blry)}}

```

Adjust placement of markers and cut lines.

1. Dimension to adjust
2. Overlap dimension (with units)

```

14133 \def\split@adj#1#2{%
14134 \split@tmp=#2%
14135 \divide\split@tmp by 2%
14136 \advance\split@tmp by #1%
14137 \edef\t{\the\split@tmp}}

```

Get initial offset in a direction.

1. Number of segments in direction
2. Overlap in centimetres (without unit)
3. Effective size, in centimetres (without unit), of sheets in direction
4. Full size, in centimetres (without unit), of board in direction.

```

14138 \def\split@get@init#1#2#3#4{%
14139 \pgfmathparse{((#1 * #3 - (#1 - 1) * #2) - #4)/2}%
14140 \xdef\split@off{\pgfmathresult}%
14141 \hex@dbg{2}{((#1 * #3 - (#1 - 1) * #2) - #4)/2 -> '\split@off'}}

```

Get initial offset of first segment.

1. Number of rows
2. Number of columns
3. Overlap in centimetres (without unit)
4. Effective height, in centimetres (without unit), of sheets
5. Effective width, in centimetres (without unit), of sheets
6. Full height, in centimetres (without unit), of board

7. Full width, in centimetres (without unit), of board

```
14142 \def\split@getinit#1#2#3#4#5#6#7{%
14143 \split@get@init{#1}{#3}{#4}{#6}\xdef\dy{\split@off cm}
14144 \split@get@init{#2}{#3}{#5}{#7}\xdef\dx{\split@off cm}}
```

Get coordinates of a segment

1. Column number
2. Row number
3. Overlap, in centimetres (without unit)

```
14145 \def\split@getcoords#1#2#3{%
14146 \hex@dbg{2}{Getting coords 'c#1r#2'}%
14147 \split@getem{c#1r#2}%
14148 \edef\sulx{\split@ulx}%
14149 \edef\suly{\split@uly}%
14150 \edef\slrx{\split@lrx}%
14151 \edef\slry{\split@lry}%
14152 \edef\mlx{\split@blrx}%
14153 \edef\mrx{\split@bulx}%
14154 \edef\mty{\split@bully}%
14155 \edef\mby{\split@blry}%
14156 \pgfmathparse{int(#1-1)}\edef\pc{\pgfmathresult}%
14157 \pgfmathparse{int(#2-1)}\edef\pr{\pgfmathresult}%
14158 \pgfmathparse{int(#1+1)}\edef\nc{\pgfmathresult}%
14159 \pgfmathparse{int(#2+1)}\edef\nr{\pgfmathresult}%
14160 \pgfutil@ifundefined{pgf@sh@ns@c\pc r#2}{}{% Left
14161 \hex@dbg{3}{\space Getting left 'c\pc r#2'}%
14162 \split@getem{c\pc r#2}\split@adj{\split@ulx}{-#3}\edef\mlx{\t}}%
14163 \pgfutil@ifundefined{pgf@sh@ns@c\nc r#2}{}{% Right
14164 \hex@dbg{3}{\space Getting right 'c\nc r#2'}%
14165 \split@getem{c\nc r#2}\split@adj{\split@lrx}{#3}\edef\mrx{\t}}%
14166 \pgfutil@ifundefined{pgf@sh@ns@c#1r\pr}{}{% Above
14167 \hex@dbg{3}{\space Getting above 'c#1 r\pr'}%
14168 \split@getem{c#1r\pr}\split@adj{\split@lry}{#3} \edef\mty{\t}}%
14169 \pgfutil@ifundefined{pgf@sh@ns@c#1r\nr}{}{% Below
14170 \hex@dbg{3}{\space Getting below 'c#1 r\nr'}%
14171 \split@getem{c#1r\nr}\split@adj{\split@uly}{-#3}\edef\mby{\t}}%
14172 \draw[fill=red] (\mlx,\mty) circle(.2);%
14173 \draw[fill=green] (\mrx,\mty) circle(.4);%
14174 \draw[fill=blue] (\mlx,\mby) circle(.6);%
14175 \draw[fill=cyan] (\mrx,\mby) circle(.8);%
14176 \split@w{%
14177 \@percentchar^^J%
14178 \string\segment(\sulx,\suly)(\slrx,\slry){\mlx}{\mrx}{\mby}{\mty}
14179 \@percentchar\space c#1r#2}
14180 }
```

Stream to write to

```
14181 \newwrite\split@calcout
```

Short-hand for write outs.

```
14182 \def\split@w{\immediate\write\split@calcout}
```

Open stream and set-up

```
14183 \def\split@header#1{%
14184   \immediate\openout\split@calcout=#1.tex
14185   \ifsplit@standalone
14186     \pgfmathparse{\split@margin*.95}\edef\tmp{\pgfmathresult}
14187     \split@w{\@percentchar\@percentchar\space These are made with
14188       'calcsplit' with '-jobname \jobname'}
14189     \split@w{
14190       ^^J\string\documentclass[twoside]{article}
14191       ^^J\string\usepackage{geometry}
14192       ^^J\string\geometry{papersize={\the\paperwidth,\the\paperheight},margin=\tmp cm}
14193       ^^J\string\usepackage{wargame}
14194       ^^J\string\setlength{\string\parindent}{0pt}
14195       ^^J\string\setlength{\string\parskip}{0pt}
14196       ^^J\string\begin{document}
14197       ^^J\string\ignorespaces\@percentchar}
14198     \fi
14199     \split@w{\string\def\string\boardfile{\split@img}\@percentchar}
14200     \split@w{\string\def\string\boardscale{\split@scale}\@percentchar}
14201 }
```

Write final stuff and close stream

```
14202 \def\split@footer{%
14203   \ifsplit@standalone
14204     \split@w{^^J\string\end{document}}
14205     \fi
14206     \split@w{^^J\@percentchar\@percentchar End of '\jobname'^^J}
14207     \immediate\closeout\split@calcout
14208 }
```

Initial calculations. This draws the board and then extracts the dimensions of the board. It also defines some styles for drawing the board segments.

```
14209 \def\split@init#1{%
14210   \node[scale=\split@scale,
14211     inner sep=0pt,
14212     outer sep=0pt,
14213     anchor=north west,
14214     transform shape](b){\includegraphics{#1}};
14215   \split@getboard{b}
14216   %x
14217   \split@tmp=\split@blr cm\advance\split@tmp by -\split@bulx%
14218   \wg@pt@to@cm{\split@tmp}\edef\split@bw{\pgfmathresult}%
14219   \pgfmathparse{abs(\split@bw)}\edef\split@bw{\pgfmathresult}%
14220   %
14221   \split@tmp=\split@buly cm\advance\split@tmp by -\split@blry%
14222   \wg@pt@to@cm{\split@tmp}\edef\split@bh{\pgfmathresult}%
14223   \pgfmathparse{abs(\split@bh)}\edef\split@bh{\pgfmathresult}%
14224   %
```

```

14225 \wg@pt@to@cm{\paperwidth}\edef\split@pw{\pgfmathresult}%
14226 \wg@pt@to@cm{\paperheight}\edef\split@ph{\pgfmathresult}%
14227 %
14228 \wg@pt@to@cm{\textwidth}\edef\split@ew{\pgfmathresult}%
14229 \wg@pt@to@cm{\textheight}\edef\split@eh{\pgfmathresult}%
14230 %
14231 \hex@dbg{1}{Board:
14232   (\split@bulx,\split@buly)(\split@blrx,\split@blry) \split@bw x\split@bh
14233   ^^JPaper: \split@pw x\split@ph
14234   ^^JEffective: \split@ew x\split@eh
14235 }
14236 \tikzset{
14237   split/paper size/.style={
14238     shape=rectangle,
14239     minimum width=\paperwidth,
14240     minimum height=\paperheight,
14241     split/paper outline,
14242   },
14243   split/effective size/.style={
14244     shape=rectangle,
14245     minimum width=\textwidth,
14246     minimum height=\textheight,
14247     split/effective outline},
14248   split/board size/.style={
14249     shape=rectangle,
14250     minimum width=\split@bw cm,
14251     minimum height=\split@bh cm,
14252     split/board outline}}
14253 \node[board/.try,split/board size,anchor=north west] {};
14254 }

```

Calculate effective sheet sizes from sheet dimensions and the defined margin.

```

14255 \def\split@text@dim#1{%
14256   \textwidth=\paperwidth%
14257   \textheight=\paperheight%
14258   \advance\textwidth by -#1cm%
14259   \advance\textwidth by -#1cm%
14260   \advance\textheight by -#1cm%
14261   \advance\textheight by -#1cm%
14262   \global\textwidth=\textwidth%
14263   \global\textheight=\textheight%
14264 }

```

Options for the `\splitboard` macro.

```

14265 \newif\ifsplit@standalone\split@standalonetrue
14266 \tikzset{%
14267   split/.search also={/tikz},%
14268   split/.cd,%
14269   margin/.store in=\split@margin,
14270   paper/.is choice,%
14271   paper/a4/.code={%
14272     \hex@dbg{3}{A4 paper for split}%

```

```

14273 \global\paperwidth=21cm%
14274 \global\paperheight=29.7cm%
14275 \split@text@dim{\split@margin}},
14276 paper/a3/.code={%
14277 \hex@dbg{3}{A3 paper for split}%
14278 \global\paperheight=42cm%
14279 \global\paperwidth=29.7cm%
14280 \split@text@dim{\split@margin}},
14281 paper/letter/.code={%
14282 \hex@dbg{3}{Letter paper for split}
14283 \paperheight=27.9cm,%
14284 \paperwidth=21.6cm,%
14285 \split@text@dim{\split@margin}},%
14286 paper/tabloid/.code={%
14287 \hex@dbg{3}{Tabloid paper for split}%
14288 \paperheight=43.2cm,%
14289 \paperwidth=27.9cm,%
14290 \split@text@dim{\split@margin}},
14291 landscape/.code={%
14292 \hex@dbg{3}{Landscape option for split}
14293 \split@tmp=\paperheight
14294 \global\paperheight=\paperwidth
14295 \global\paperwidth=\split@tmp
14296 \split@tmp=\textheight
14297 \global\textheight=\textwidth
14298 \global\textwidth=\split@tmp},
14299 standalone/.is if=split@standalone,
14300 scale/.store in=\split@scale,
14301 output/.store in=\split@out,
14302 ncol/.store in=\split@ncol,
14303 nrow/.store in=\split@nrow,
14304 overlap/.store in=\split@ov, % Centimeter, no unit
14305 image/.store in=\split@img,
14306 paper/.default=a4, paper/.initial=a4,
14307 margin/.default=.6, margin/.initial=.6,
14308 ncol/.default=0, ncol/.initial=0,
14309 nrow/.default=0, nrow/.initial=0,
14310 overlap/.default=2, overlap/.initial=2,
14311 image/.default=board, image/.initial=board,
14312 output/.default=\jobname_out,
14313 standalone/.default=true,
14314 scale/.default=1,
14315 }

```

The actual macro. The argument is key-value pairs of options.

```

14316 \def\splitboard#1{%
14317 \pgfkeys{/tikz/split/.cd,%
14318 standalone,%
14319 output,%
14320 margin,%
14321 paper,%
14322 image,%
14323 overlap,%

```

```

14324     scale,%
14325     ncol,%
14326     nrow,%
14327     #1}
14328 \hex@dbg{1}{%
14329     Paper:      '\the\paperwidth'x'\the\paperheight'
14330     ^^JEffective: '\the\textwidth'x'\the\textheight'
14331     ^^JNcols:   '\split@ncol'
14332     ^^JNrows:   '\split@nrow'
14333     ^^JOverlap: '\split@ov' cm}
14334 \split@header{\split@out}
14335 \begin{tikzpicture}
14336 \split@init{\split@img}
14337 \split@getinit{%
14338 \split@nrow}{%
14339 \split@ncol}{%
14340 \split@ov}{\split@eh}{\split@ew}{\split@bh}{\split@bw}
14341 \node[split/effective size,
14342 above left=\dy and \dx of b.north west,
14343 anchor=north west] (c1r1) {};
14344 \node[split/paper size] at (c1r1) {};
14345 %
14346 \foreach \r [remember=\r as \pr (initially 0)] in {1,...,\split@nrow}{%
14347 \ifnum\r>1
14348 \hex@dbg{3}{Placing first column of row '\r'}
14349 \node[split/effective size,
14350 below=-\split@ov cm of c1r\pr.south west,anchor=north west] (c1r\r){};
14351 \node[split/paper size] at (c1r\r) {};
14352 \fi
14353 \foreach \c [remember=\c as \pc (initially 1)] in {2,...,\split@ncol}{%
14354 \ifnum\c>\split@ncol\else%
14355 \ifnum\c>\pc
14356 \hex@dbg{3}{Placing column '\c' ('\pc') of row '\r'}
14357 \node[split/effective size,
14358 right=-\split@ov cm of c\pc r\r.north east,anchor=north west]
14359 (c\c r\r) {};
14360 \node[split/paper size] at (c\c r\r) {};
14361 \fi
14362 \fi
14363 }
14364 }
14365 \foreach \r [remember=\r as \pr (initially 0)] in {1,...,\split@nrow}{%
14366 \foreach \c [remember=\c as \pc (initially 0)] in {1,...,\split@ncol}{%
14367 \split@getcoords{\c}{\r}{\split@ov cm}}
14368 \end{tikzpicture}
14369 \split@footer
14370 }

```

Macro used by the written file.

1. first coordinate (e.g., (hex ak:c=C,r=17))
2. second coordinate (e.g., (hex ak:c=M,r=33))

3. Crop mark left
4. Crop mark right
5. Crop mark bottom
6. Crop mark top

```

14371 \def\segment(#1)(#2)#3#4#5#6{%
14372   \begin{tikzpicture}%
14373     \begin{scope}
14374       \clip (#1) rectangle (#2);
14375       \node[scale=\boardscale,
14376         inner sep=0pt,
14377         outer sep=0pt,
14378         anchor=north west,
14379         transform shape]{\includegraphics{\boardfile}};
14380     \end{scope}
14381     \pgfinterruptboundingbox
14382     \draw(#3,#6)--++( 0.0, 0.3);
14383     \draw(#3,#6)--++(-0.3, 0.0);
14384     \draw(#3,#5)--++( 0.0,-0.3);
14385     \draw(#3,#5)--++(-0.3, 0.0);
14386     \draw(#4,#6)--++( 0.0, 0.3);
14387     \draw(#4,#6)--++( 0.3, 0.0);
14388     \draw(#4,#5)--++( 0.0,-0.3);
14389     \draw(#4,#5)--++( 0.3, 0.0);
14390     \endpgfinterruptboundingbox
14391   \end{tikzpicture}%
14392   \cleardoublepage}%

```

5.5 The wargame.chit TikZ library

We define the library for making chits. We load the hex TikZ `wargame.natoapp6c` library and the `amsmath` and `amstext` packages as we need those.

```

14393 \RequirePackage{amsmath}
14394 \RequirePackage{amstext}
14395 \usetikzlibrary{wargame.util,wargame.natoapp6c,math}

```

5.5.1 Debugging

```

\chitdbglvl
\chit@dbg

```

Some macros for debugging. Similar to what we have in `wargame.hex` (see Section 5.4).

```

14396 \newcount\chitdbglvl\chitdbglvl=\wargamedbglvl
14397 \def\chit@dbg#1#2{%
14398   \ifnum#1>\chitdbglvl\relax\else\message{^^J#2}\fi}

```

5.5.2 The chit key namespace

Some stuff to consider wrt. line widths. Setting the line width in the `chit` scope overrides frame settings. The frame stroke can be larger but not smaller. Setting the stroke width in the symbol scope sets it for the symbol only. Thus, to get a thin border, we need to

- Set a small line width in the top `chit` scope.
- Possible set a larger line width in the frame sub-scope.
- Set a larger line width in the symbol sub-scope.

I do not know why this is.

```
/chit/full
/chit/symbol
/chit/left
/chit/right
/chit/upper left
/chit/upper right
/chit/lower left
/chit/lower right
/chit/factors
/chit/extra
/chit/setup
/chit/bevel
/chit/id
```

The parts of a `chit`

```
14399 \newif\ifchit@clip\chit@cliptrue
14400 \tikzset{%
14401 /chit/.search also={/tikz},
14402 /chit/.cd,
14403 full/.store in=\chit@full,          full/.initial=,%
14404 symbol/.store in=\chit@symbol,      symbol/.initial=,%
14405 left/.store in=\chit@left,          left/.initial=,%
14406 unique/.style={/chit/left={#1}},%
14407 right/.store in=\chit@right,         right/.initial=,%
14408 parent/.style={/chit/right={#1}},%
14409 upper left/.store in=\chit@upper@left, upper left/.initial=,%
14410 upper right/.store in=\chit@upper@right, upper right/.initial=,%
14411 lower left/.store in=\chit@lower@left, lower left/.initial=,%
14412 lower right/.store in=\chit@lower@right, lower right/.initial=,%
14413 factors/.store in=\chit@factors,    factors/.initial=,%
14414 setup/.store in=\chit@setup,        setup/.initial=,%
14415 id/.store in=\chit@id,              id/.initial=,%
14416 frame/.store in=\chit@frame,         frame/.initial=,%
14417 extra/.store in=\chit@extra,         extra/.initial=,%
14418 bev/.store in=\chit@bevel,           bev/.initial=,%
14419 bevel fraction/.store in=\chit@bevel@frac, bevel fraction/.initial=10,
14420 bevel/.is choice,
```

```

14421 bevel/none/.style = {/chit/bev=},
14422 bevel/north west/.style = {/chit/bev=1},
14423 bevel/north east/.style = {/chit/bev=2},
14424 bevel/south west/.style = {/chit/bev=3},
14425 bevel/south east/.style = {/chit/bev=4},
14426 bevel/NW/.style = {/chit/bev=1},
14427 bevel/NE/.style = {/chit/bev=2},
14428 bevel/SW/.style = {/chit/bev=3},
14429 bevel/SE/.style = {/chit/bev=4},
14430 bevel/.default = north west,
14431 clip/.is if=chit@clip,%
14432 nato shape/.store in=\chit@n@to@shape,
14433 }

```

```

/tikz/chit/full
/tikz/chit/symbol
/tikz/chit/left
/tikz/chit/right
/tikz/chit/upper left
/tikz/chit/upper right
/tikz/chit/lower left
/tikz/chit/lower right
/tikz/chit/factors
/tikz/chit/setup
/tikz/chit/id

```

Styles of each element in a chit. Users may override these at their own peril. That is, it is OK to override them, but the user should be careful.

```

14434 \def\chit@sym@sc@le{.4}
14435 \tikzset{
14436 chit/symbol/.style={scale=\chit@sym@sc@le,transform shape},
14437 chit/parts/.style={shape=rectangle,transform shape},
14438 chit/factors/.style={chit/parts,anchor=south},
14439 chit/left/.style={chit/parts,anchor=base,rotate=90},%Anchor was south
14440 chit/right/.style={chit/parts,anchor=north,rotate=90},
14441 chit/upper left/.style={chit/parts,anchor=north west},
14442 chit/upper right/.style={chit/parts,anchor=north east},
14443 chit/lower left/.style={chit/parts,anchor=south west},
14444 chit/lower right/.style={chit/parts,anchor=south east},
14445 chit/setup/.style={chit/parts},
14446 chit/full/.style={chit/parts},
14447 chit/frame/.try={draw=pgfstrokecolor},
14448 chit/bevel highlight/.style={fill=white,opacity=.25},
14449 chit/bevel shadow/.style={fill=black,opacity=.25},
14450 }
14451 \def\chit@bevel@frac{10}
14452 \newif\ifchit@draw@frame\chit@draw@frametrue
14453 \tikzset{
14454 chit/frame style/.search also={/tikz},
14455 chit/frame style/.cd,
14456 none/.code={\chit@draw@framefalse},

```

```

14457 draw/.code={%
14458   \chit@dbg{2}{Frame draw option '#1'}
14459   \edef\tikz@temp{#1}%
14460   \ifx\tikz@temp\tikz@nonetext%
14461     \chit@draw@framefalse%
14462   \else%
14463     \chit@draw@frametrue%
14464     \tikzset{/tikz/draw=#1}
14465   \fi
14466 }
14467 }
14468

```

5.5.3 The chit styles

/tikz/chit

This key sets up a node to make a chit. The key takes a single argument which in turn must contain key–value pairs in the /chit (or /tikz) namespace(s). We set the `shape` parameter of the node, and calls the passed keys in the /chit namespace to set-up elements of the chit.

```

14469 \tikzset{%
14470   chit/.code={%
14471     \chit@dbg{2}{chit arguments are '#1'}%
14472     \pgfkeys{/tikz/transform shape,/tikz/shape=chit}%
14473     \pgfkeys{/chit/.cd,nato shape=natoapp6c,#1}}

```

We define a counter to set-up unique names for chit nodes.

```

14474 \newcounter{chit@id}\setcounter{chit@id}{0}

```

5.5.4 The \chit shape

```

\chit@n@to
\@chit@n@to
\@@chit@n@to
\@chit@n@to@

```

These macros puts the NATO App6(c) symbol into a chit. The first macro takes the identifier and position of the symbol, and then scans for options. If no options are given, then we go directly to the rendering (`\@chit@n@to@`). Otherwise, we may also need to scan for an offset given as ($\langle\delta-x,\delta-y\rangle$).

```

14475 \def\chit@n@to#1#2{%
14476   %% Without a following start square bracket '[' by-pass to final
14477   \chit@dbg{1}{Chit NATO App6(c) first step '#1' '#2'}
14478   \@ifnextchar[{%
14479     \%message{^^JStart square bracket}%
14480     \@chit@n@to{#1}{#2}}{%
14481     \%message{^^JNo start square bracket}%
14482     \@chit@n@to@{#1}{#2}}%]]
14483 }

```

The following macro is called if we had no options.

```

14484 \def\chit@n@to@shape{natoapp6c}
14485 \def\@chit@n@to@#1#2#3\end@chit@n@to{%
14486 \chit@dbg{1}{Chit NATO App6(c) w/o offset:
14487   ^^J Options: '#3'
14488   ^^J ID:      '#1'
14489   ^^J Position: '#2'
14490   ^^J Style:   '\chit@n@to@shape'
14491 }
14492 \chit@dbg{2}{NATO shape: '\chit@n@to@shape'}
14493 \node[chit/symbol,\chit@n@to@shape={#3,id=#1}] (#1) at (#2) {};
14494 \chit@dbg{4}{Chit NATO App6(c) ended}%
14495 }

```

This is called if we had an option-like argument. Check if we have an offset

```

14496 \def\@chit@n@to@#1#2[#3]{%
14497 \chit@dbg{1}{Chit NATO App6(c) second step '#1' '#2' '#3'}
14498 \ifnextchar({\@chit@n@to@#1}{#2}{#3}){\@chit@n@to@#1}{#2}{#3}(0,0)}%
14499 }

```

This called if we had option-like argument.

```

14500 \def\@@chit@n@to@#1#2#3(#4)\end@chit@n@to{%
14501 \chit@dbg{1}{Chit NATO App6(c) w/offset:
14502   ^^J Options: #3
14503   ^^J ID:      #1
14504   ^^J Position: #2
14505   ^^J Offset:  #4}
14506 \chit@dbg{10}{==== NATO shape: '\chit@n@to@shape' ====}
14507 \node[chit/symbol,\chit@n@to@shape={#3,id=#1}] (#1) at ($(#2)+(#4)$) {};}

```

<pre> \chit@tr@ns@nchor \chit@nchor </pre>
--

Get anchor of sub-symbol element in chit. We need to do this, because the symbol is translated and scaled.

```

14508 \def\chit@tr@ns@nchor{%
14509 \chit@dbg{10}{Translating anchor '\the\pgf@x', '\the\pgf@y'}
14510 \wg@tmpa=\pgf@x%
14511 \wg@tmpb=\pgf@y%
14512 \symbol%
14513 \chit@dbg{10}{Symbol origin '\the\pgf@x', '\the\pgf@y'}
14514 \wg@tmpc=\pgf@x%
14515 \wg@tmpd=\pgf@y%
14516 \pgf@x=\chit@sym@sc@le\wg@tmpa%
14517 \pgf@y=\chit@sym@sc@le\wg@tmpb%
14518 \chit@dbg{10}{Scaled anchor '\the\pgf@x', '\the\pgf@y'}
14519 \advance\pgf@x\wg@tmpc%
14520 \advance\pgf@y\wg@tmpd%
14521 \chit@dbg{10}{Offset anchor '\the\pgf@x', '\the\pgf@y'}
14522 }

```

```

14523 \def\chit@nchor#1#2{%
14524 \chit@dbg{10}{Get chit sub anchor of '#1' '#2'}%
14525 \wg@sub@nchor{#1}{#2}%
14526 \chit@tr@ns@nchor%
14527 \chit@dbg{10}{Got chit sub anchor of '\the\pgf@x '\the\pgf@y}%
14528 }
14529 \def\chit@sym@nchor#1{%
14530 \chit@dbg{10}{Get chit symbol '#1'}%
14531 \edef\tmpid{\id symbol}%
14532 \chit@nchor{\tmpid}{#1}}
14533 \def\chit@report{}
14534 \tikzset{
14535 zone turn/.style={},
14536 zone mult/.style={}
14537 }
14538 \def\chit@bkg@p@th{%
14539 \northeast%
14540 \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
14541 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14542 \wg@tmpa=-\wg@tmpa \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14543 \wg@tmpb=-\wg@tmpb \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14544 \wg@tmpa=-\wg@tmpa \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14545 \pgfclosepath%
14546 }

```

Now follows the actual chit shape. This is rather long, so we will break it up a bit

```

14547 \def\chit@bevel@path#1{
14548 \scope[#1]
14549 \wg@tmpc=\wg@tmpa%
14550 \wg@tmpd=\wg@tmpb%
14551 %% Absolute values
14552 \ifdim\wg@tmpa<0pt\multiply\wg@tmpc by -1\fi%
14553 \ifdim\wg@tmpb<0pt\multiply\wg@tmpd by -1\fi%
14554 % Why the hell do I need this?
14555 \chit@dbg{10}{'\the\wg@tmpa' '\the\wg@tmpb'}%
14556 %% Smallest dimension
14557 \ifdim\wg@tmpc>\wg@tmpd \wg@tmpc=\wg@tmpd\fi%
14558 \ifdim\wg@tmpc<\wg@tmpd \wg@tmpd=\wg@tmpc\fi%
14559 %% Restore sign
14560 \ifdim\wg@tmpa<0pt\multiply\wg@tmpc by -1\fi%
14561 \ifdim\wg@tmpb<0pt\multiply\wg@tmpd by -1\fi%
14562 %% Take the fraction
14563 \multiply\wg@tmpc by \chit@bevel@frac%
14564 \multiply\wg@tmpd by \chit@bevel@frac%
14565 \divide\wg@tmpc100%
14566 \divide\wg@tmpd100%
14567 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14568 % Move down along edge
14569 \wg@tmpb=-\wg@tmpb%
14570 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14571 % Move left along edge
14572 \wg@tmpa=-\wg@tmpa%
14573 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%

```

```

14574 % Move in and up
14575 \advance\wg@tmpa\wg@tmpc%
14576 \advance\wg@tmpb\wg@tmpd%
14577 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14578 % Move right, but in
14579 \advance\wg@tmpa-\wg@tmpc\wg@tmpa=-\wg@tmpa%
14580 \advance\wg@tmpa-\wg@tmpc%
14581 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14582 % Move up but down
14583 \advance\wg@tmpb-\wg@tmpd\wg@tmpb=-\wg@tmpb%
14584 \advance\wg@tmpb-\wg@tmpd%
14585 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14586 \pgfclosepath%
14587 \pgfusepath{fill}%
14588 \endscope%
14589 }

```

The first thing is we declare some saved anchors. These are computed (and defined as internal macros) when the shape is instantiated. The anchors give the centre and north east corner of the node, the place to put the NATO App6(c) symbol and factors. We also set a dimension for the margins (corner and factors elements).

```

14590 \pgfdeclareshape{chit}{
14591 \savedanchor\center{\pgf@x=0cm\pgf@y=0cm}
14592 \savedanchor\northeast{\pgf@x=0.6cm\pgf@y=\pgf@x}
14593 \savedanchor\symbol{\pgf@x=0cm\pgf@y=0.1cm}
14594 \savedanchor\factors{\pgf@x=0cm\pgf@y=-0.5cm}
14595 \saveddimen\margin{\pgf@x=0.04cm}

```

Next, we define some saved macros. These are called (and declares internal macros) when the shape is instantiated. We define macros for the identifier,

```

14596 \savedmacro\id{%
14597 \chit@dbg{4}{Chit ID: \meaning\chit@id}%
14598 \@ifundefined{chit@id}{\let\chit@id\pgfutil@empty}{}%
14599 \ifx\chit@id\pgfutil@empty%
14600 \wg@r@ndom@id%
14601 \edef\id{chit\wg@uuiid}%
14602 \else%
14603 \edef\id{\chit@id}%
14604 \fi%
14605 \chit@dbg{4}{Chit ID stored: \meaning\chit@id}
14606 }
14607 \savedmacro\chitframeopt{%
14608 \let\chitframeopt\pgfutil@empty%
14609 \@ifundefined{chit@frame}{}{%
14610 \edef\chitframeopt{\chit@frame}}
14611 \chit@dbg{3}{Chit Frame options: \meaning\chitframeopt}%
14612 }
14613 \savedmacro\thisname{\def\thisname{chit}}

```

We define the regular anchors of the shape. That is, the centre, corners, and edges.

```

14614 \anchor{center}{\center}
14615 \anchor{north east}{\northeast}

```

```

14616 \anchor{north west}{\northeast\pgf@x=-\pgf@x}
14617 \anchor{south west}{\northeast\pgf@x=-\pgf@x\pgf@y=-\pgf@y}
14618 \anchor{south east}{\northeast\pgf@y=-\pgf@y}
14619 \anchor{north}      {\northeast\pgf@x=0cm}
14620 \anchor{south}     {\northeast\pgf@x=0cm\pgf@y=-\pgf@y}
14621 \anchor{east}     {\northeast\pgf@y=0cm}
14622 \anchor{west}    {\northeast\pgf@x=-\pgf@x\pgf@y=0cm}

```

Next, we want to be able to reference the symbol anchors too. So we define these anchors from the embedded node anchors. Note, these anchors will not exist if the chit is made with `full=<args>`.

```

14623 \anchor{symbol north east}{\chit@sym@nchor{north east}}
14624 \anchor{symbol north west}{\chit@sym@nchor{north west}}
14625 \anchor{symbol south east}{\chit@sym@nchor{south east}}
14626 \anchor{symbol south west}{\chit@sym@nchor{south west}}
14627 \anchor{symbol north}     {\chit@sym@nchor{north}}
14628 \anchor{symbol west}     {\chit@sym@nchor{west}}
14629 \anchor{symbol south}    {\chit@sym@nchor{south}}
14630 \anchor{symbol east}     {\chit@sym@nchor{east}}
14631 \anchor{symbol upper}    {\chit@sym@nchor{upper}}
14632 \anchor{symbol lower}    {\chit@sym@nchor{lower}}
14633 \anchor{symbol left}     {\chit@sym@nchor{left}}
14634 \anchor{symbol right}    {\chit@sym@nchor{right}}
14635 \anchor{symbol echelon}  {\chit@sym@nchor{echelon}}
14636 \anchor{symbol below}    {\chit@sym@nchor{below}}

```

Some anchors to sub-elements. Some of them only exists if we have NATO App6(c) symbol in the chit.

```

14637 \anchor{symbol}      {\symbol}
14638 \anchor{factors}    {\factors}
14639 \anchor{left}       {\chit@sym@nchor{west}\advance\pgf@x-\margin}
14640 \anchor{right}{\chit@sym@nchor{east}\advance\pgf@x+\margin}
14641 \anchor{upper right} {%
14642   \northeast \advance\pgf@x-\margin \advance\pgf@y-\margin%
14643 }
14644 \anchor{upper left}{
14645   \northeast \advance\pgf@x-\margin \advance\pgf@y-\margin \pgf@x=-\pgf@x%
14646 }
14647 \anchor{lower right} {%
14648   \northeast \advance\pgf@x-\margin \advance\pgf@y-\margin \pgf@y=-\pgf@y%
14649 }
14650 \anchor{lower left}{
14651   \northeast \advance\pgf@x-\margin \advance\pgf@y-\margin%
14652   \pgf@x=-\pgf@x \pgf@y=-\pgf@y%
14653 }

```

Now for the actual path. For the background path, we simply specify the frame. This is so that this will get drawn (and possibly filled) using the appropriate options.

```

14654 \backgroundpath{%
14655   %% This is the outline of the chit only. The rest of the chit is
14656   %% made on the foreground "path".
14657   \chit@dbg{1}{Chit drawing background path}
14658   \chit@bkg@p@th%

```

```

14659 % \northeast%
14660 % \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
14661 % \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14662 % \wg@tmpa=-\wg@tmpa \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14663 % \wg@tmpb=-\wg@tmpb \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14664 % \wg@tmpa=-\wg@tmpa \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14665 % \pgfclosepath
14666 }

```

Finally, we make the foreground rendered path. This is where we do the most stuff. We do it in the *behind* foreground path so that we can ensure things are drawn the way we want it.

The first thing is to set-up the clipping to the chit frame.

```

14667 \behindforegroundpath{%
14668 \chit@dbg{1}{Chit drawing foreground path}
14669 % \chit@dbg{4}{%
14670 % Chit foreground: \meaning\id
14671 % ^^J ID (set): \meaning\chit@id
14672 % ^^J Symbol: \meaning\chit@symbol
14673 % ^^J Full: \meaning\chit@full
14674 % ^^J Factors: \meaning\chit@factors
14675 % ^^J Left: \meaning\chit@left
14676 % ^^J Right: \meaning\chit@right
14677 % ^^J Upper left: \meaning\chit@upper@left
14678 % ^^J Lower left: \meaning\chit@lower@left
14679 % ^^J Upper right: \meaning\chit@upper@right
14680 % ^^J Lower right: \meaning\chit@lower@right
14681 % ^^J Extra: \meaning\chit@extra
14682 % ^^J Bevel: \meaning\chit@bevel
14683 % ^^J Frame: \meaning\chit@frame}
14684 \chit@dbg{1}{Chit report}
14685 \chit@report{}
14686 \chit@dbg{1}{Chit start scope}
14687 \pgfscope
14688 %
14689 \ifchit@clip%
14690 \chit@dbg{1}{Chit clip path}
14691 \chit@bkg@p@th%
14692 % \northeast%
14693 % \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
14694 % \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14695 % \wg@tmpa=-\wg@tmpa \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14696 % \wg@tmpb=-\wg@tmpb \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14697 % \wg@tmpa=-\wg@tmpa \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
14698 % \pgfclosepath%
14699 \pgfusepath{clip}%
14700 \fi%

```

If we do not have the symbol key set, then we set the full key as a picture.

```

14701 \@ifundefined{chit@symbol}{%
14702 %% Draw full stuff
14703 \@ifundefined{chit@full}{-%
14704 \chit@dbg{1}{Chit draw full image: '\meaning\chit@full'}

```

```

14705     \center\wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
14706     \wg@pic@all{\chit@full}{\the\wg@tmpa,\the\wg@tmpb}{chit/full}}%
14707     }{% With NATO symbol

```

Otherwise, we put in a node with shape `natoapp6c` and pass the `symbol` key–value pairs as options.

```

14708     \chit@dbg{1}{Chit draw symbol image}
14709     \edef\symid{\id symbol}%
14710     \symbol%
14711     \edef\args{\the\symid}{\the\pgf@x,\the\pgf@y}\chit@symbol}%
14712     \chit@dbg{6}{Arguments to chit NATO symbol: \meaning\args}%
14713     \chit@dbg{1}{Chit draw nato image '\symid'}
14714     \expandafter\chit@ncto\args\@end@chit@ncto%
14715     \chit@dbg{6}{After making NATO symbol in chit}%

```

Having made the NATO App6(c) symbol, which we gave the node name $\langle id \rangle$ symbol where $\langle id \rangle$ is the ID of this chit, we can make the rest of the chit elements. These are the left and right elements, which are set west and east of the symbol, respectively; the factors; and the four corner elements.

If the respective elements have not been specified, we do not make them.

First the left and right elements. Note that these uses the anchors of the embedded `natoapp6c` node for placement.

```

14716     % Put in left of symbol
14717     \@ifundefined{chit@left}{}{%
14718     \chit@dbg{2}{Chit draw left: '\meaning\chit@left'}
14719     \wg@nchor{\thisname}{left}
14720     \begin{scope}[]
14721     \wg@pic@all{\chit@left}{\pgf@x,\pgf@y}{chit/left}%
14722     \end{scope}}%
14723     % Put in right of symbol
14724     \@ifundefined{chit@right}{}{%
14725     \chit@dbg{2}{Chit draw right: '\meaning\chit@right'}
14726     \wg@nchor{\thisname}{right}
14727     \begin{scope}[]
14728     \wg@pic@all{\chit@right}{\pgf@x,\pgf@y}{chit/right}%
14729     \end{scope}}%

```

Next, we want to put in the corner elements. But before we do that, we use our saved anchors and dimensions to calculate the coordinates. Note that the corner elements are anchored to the corners (plus margin) of the chit frame.

```

14730     % Get coordinates
14731     \northeast%
14732     \wg@tmpa=\pgf@x%
14733     \wg@tmpb=\pgf@y%
14734     \advance\wg@tmpa-\margin%
14735     \advance\wg@tmpb-\margin%

```

With the coordinates extracted, we set the four corner elements. Note, for the anchoring to work, we should specify pictures that have anchors (e.g., nodes). If not, we must take care to give offsets or the like.

```

14736     % Put in upper left corner
14737     \@ifundefined{chit@upper@left}{}{%
14738     \chit@dbg{1}{Chit draw upper left: '\meaning\chit@upper@left'}%
14739     \wg@nchor{\thisname}{upper left}

```

```

14740     \begin{scope}[]
14741         \wg@pic@all{\chit@upper@left}{-}{\pgf@x,\pgf@y}{chit/upper left}%
14742     \end{scope}}
14743 % Put in upper right corner
14744 \@ifundefined{chit@upper@right}{-}{%
14745     \chit@dbg{1}{Chit draw upper right: '\meaning\chit@upper@right'}
14746     \wg@nchor{\thisname}{upper right}%
14747     \begin{scope}[]
14748         \wg@pic@all{\chit@upper@right}{-}{\pgf@x,\pgf@y}{chit/upper right}%
14749     \end{scope}}
14750 % Put in lower left corner
14751 \@ifundefined{chit@lower@left}{-}{%
14752     \chit@dbg{1}{Chit draw lower left: '\meaning\chit@lower@left'}
14753     \wg@nchor{\thisname}{lower left}%
14754     \begin{scope}[]
14755         \wg@pic@all{\chit@lower@left}{-}{\pgf@x,\pgf@y}{chit/lower left}%
14756     \end{scope}}
14757 % Put in lower right corner
14758 \@ifundefined{chit@lower@right}{-}{%
14759     \chit@dbg{1}{Chit draw lower right: '\meaning\chit@lower@right'}
14760     \wg@nchor{\thisname}{lower right}%
14761     \begin{scope}[]
14762         \wg@pic@all{\chit@lower@right}{-}{\pgf@x,\pgf@y}{chit/lower right}%
14763     \end{scope}}

```

Finally, we put in the unit factors. They are put at the bottom of the chit frame (plus margin) and are typically anchored to the south anchor of the element. Note, we can put in several factors if need be.

```

14764 % Put in factors
14765 \@ifundefined{chit@factors}{-}{%
14766     \chit@dbg{1}{Chit draw factors: '\meaning\chit@factors'}
14767     \advance\wg@tmpb-\margin%
14768     \begin{scope}[]
14769         \wg@pic@all{\chit@factors}{-}{0,-\the\wg@tmpb}{chit/factors}%
14770     \end{scope}}%
14771 % Put in extra
14772 \@ifundefined{chit@extra}{-}{%
14773     \chit@dbg{1}{Chit draw extra: '\meaning\chit@extra'}
14774     \begin{scope}[]
14775         \wg@pic@all{\chit@extra}{-}{0,0}{chit/factors}%
14776     \end{scope}}%
14777 }% End of full or symbol
14778 \endpgfscope%
14779 % Make bevel?
14780 \@ifundefined{chit@bevel}{\let\chit@bevel\empty}{-}{
14781 \ifx\chit@bevel\empty\else%
14782     \chit@dbg{1}{Chit draw bevel}
14783     %% South east bevel
14784     \northeast%
14785     \wg@tmpa=-\pgf@x\wg@tmpb=-\pgf@y%
14786     \ifcase\chit@bevel\relax%
14787     \or% 1
14788     \or\wg@tmpa=-\wg@tmpa% 2
14789     \or\wg@tmpb=-\wg@tmpb% 3

```

```

14790 \or\wg@tmpa=-\wg@tmpa\wg@tmpb=-\wg@tmpb%4
14791 \fi
14792 \chit@bevel@path{chit/bevel highlight}
14793 %% North west bevel
14794 \northeast%
14795 \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
14796 \ifcase\chit@bevel\relax%
14797 \or% 1
14798 \or\wg@tmpa=-\wg@tmpa% 2
14799 \or\wg@tmpb=-\wg@tmpb% 3
14800 \or\wg@tmpa=-\wg@tmpa\wg@tmpb=-\wg@tmpb%4
14801 \fi
14802 \chit@bevel@path{chit/bevel shadow}
14803 \fi
14804 % Draw frame?
14805 \chit@dbg{1}{Chit draw frame: '\meaning\chitframeopt'}
14806 \edef\tmp@opt{[chit/frame style/.cd,chit/frame/.try,\chitframeopt]}
14807 \chit@dbg{1}{Chit draw frame: '\meaning\tmp@opt}
14808 \expandafter\scope\tmp@opt
14809 \northeast%
14810 \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
14811 \pgfpathmoveto{\pgfpoint{\wg@tmpa}{\wg@tmpb}}%
14812 \wg@tmpa=-\wg@tmpa \pgfpathlineto{\pgfpoint{\wg@tmpa}{\wg@tmpb}}%
14813 \wg@tmpb=-\wg@tmpb \pgfpathlineto{\pgfpoint{\wg@tmpa}{\wg@tmpb}}%
14814 \wg@tmpa=-\wg@tmpa \pgfpathlineto{\pgfpoint{\wg@tmpa}{\wg@tmpb}}%
14815 \pgfclosepath%
14816 \chit@dbg{3}{Line width for frame: '\the\pgflinewidth'}
14817 \ifchit@draw@frame\pgfusepath{stroke}\fi%
14818 \chit@draw@frame>true%
14819 %\iftikz@mode@fill\pgfusepath{fill}\fi%
14820 \endscope%
14821 \chit@dbg{1}{Chit end of shape}
14822 }
14823 }

```

5.5.5 The `\chit` wrapper macro

```

\chit
\chit@
\chit@@

```

The macro to make the chits. This is a wrapper around a `node` with shape `chit`. The syntax of this macro is

```

\chit[<chit options>](<position>)(<identifier>);

```

Note that the trailing semi-colon is optional. Here *<chit options>* are any key-value pairs in the `/chit` (and `/tikz`) namespace.

The first macro parses for options.

```

14824 \def\chit{%
14825 \chit@dbg{5}{Chit}
14826 \@ifnextchar[{\chit@}{\chit@[]}%

```

```
14827 }
```

Parse for coordinates.

```
14828 \def\chit@[#1]{%
14829   \chit@dbg{5}{Chit second: '#1'}
14830   \@ifnextchar({\chit@@{#1}}{\chit@@{#1}(0,0)}%)
14831 }
```

Parse for name.

```
14832 \def\chit@@#1(#2){%
14833   \@ifnextchar({\chit@@@{#1}{#2}}{\chit@@@{#1}{#2}()})%
14834 }
```

The work horse. This simply makes a `\node` with the shape `chit`. Note, we allow for a trailing semi-colon (`;`) to have a similar feel to other `TikZ` macros.

The macro will execute the style `/tikz/every chit` if defined. Note that this will be executed *before* the usual `every chip node` style.

```
14835 \def\chit@@@#1#2(#3){%
14836   \chit@dbg{5}{Chit final:
14837     ^^J Options:   #1
14838     ^^J Position:  #2
14839     ^^J Name:      '#3'}
14840   \let\name\pgfutil@empty%
14841   \chit@dbg{1}{=== Before chit node}%
14842   \node[chit={/tikz/every chit/.try,id=#3,#1}] (tmp) at (#2) {}%
14843   \chit@dbg{2}{=== After chit node}%
14844   \ifx|#3|\relax%
14845   \else%
14846     \chit@dbg{3}{=== Renaming chit to user defined name '#3'}%
14847     \pgfnoderename{#3}{tmp}%
14848   \fi%
14849   \@ifnextchar;{\@gobble}{}%
14850 }
```

5.5.6 The Kriegspiel option for chits

This will select a Kriegspiel-like chit layout. That is, if we pass `kriegspiel` as a keyword to the `chit` style, then we will make a Kriegspiel-like chit (oblong, other symbols).

```
14851 \tikzset{
14852   /chit/kriegspiel/.code={
14853     \pgfkeys{%
14854       /tikz/shape=kriegspiel,%
14855       /chit/nato shape=kriegspiel symbol}
14856   }
14857 }
```

Shape of a Kriegspiel like chit. This mainly inherits from the `chit` shape but overrides a number of anchors.

```
14858 \pgfdeclareshape{kriegspiel}{
```

```

14859 \inheritsavedanchors[from=chit]
14860 \savedanchor\northeast{\pgf@x=0.8cm\pgf@y=0.4cm}
14861 \savedanchor\symbol{\pgf@x=0cm\pgf@y=0.15cm}
14862 \savedanchor\factors{\pgf@x=.2cm\pgf@y=-.4cm}
14863 \savedmacro\thisname{\def\thisname{kriegspiel}}
14864 \saveddimen\margin{\pgf@x=0.03cm}
14865 \inheritanchor[from=chit]{center}
14866 \inheritanchor[from=chit]{north east}
14867 \inheritanchor[from=chit]{north west}
14868 \inheritanchor[from=chit]{south west}
14869 \inheritanchor[from=chit]{south east}
14870 \inheritanchor[from=chit]{north}
14871 \inheritanchor[from=chit]{south}
14872 \inheritanchor[from=chit]{east}
14873 \inheritanchor[from=chit]{west}
14874 \inheritanchor[from=chit]{symbol north east}
14875 \inheritanchor[from=chit]{symbol north west}
14876 \inheritanchor[from=chit]{symbol south east}
14877 \inheritanchor[from=chit]{symbol south west}
14878 \inheritanchor[from=chit]{symbol north}
14879 \inheritanchor[from=chit]{symbol west}
14880 \inheritanchor[from=chit]{symbol south}
14881 \inheritanchor[from=chit]{symbol east}
14882 \inheritanchor[from=chit]{symbol upper}
14883 \inheritanchor[from=chit]{symbol lower}
14884 \inheritanchor[from=chit]{symbol left}
14885 \inheritanchor[from=chit]{symbol right}
14886 \inheritanchor[from=chit]{symbol echelon}
14887 \inheritanchor[from=chit]{symbol below}
14888 \inheritanchor[from=chit]{symbol}
14889 \inheritanchor[from=chit]{factors}
14890 \inheritanchor[from=chit]{left}
14891 \inheritanchor[from=chit]{right}
14892 \inheritanchor[from=chit]{upper right}
14893 \inheritanchor[from=chit]{upper left}
14894 \inheritanchor[from=chit]{lower right}
14895 \inheritanchor[from=chit]{lower left}
14896 % \anchor{upper right} {%
14897 %   \northeast%
14898 %   \advance\pgf@x-\margin%
14899 %   \advance\pgf@y-\margin%
14900 %   \pgf@y=-\pgf@y%
14901 %   \advance\pgf@y5pt%
14902 % }
14903 % \anchor{upper left}{
14904 %   \northeast%
14905 %   \advance\pgf@x-\margin%
14906 %   \advance\pgf@y-\margin%
14907 %   \pgf@x=-\pgf@x%
14908 %   \pgf@y=-\pgf@y%
14909 %   \advance\pgf@y5pt%
14910 % }
14911 %%

```

```

14912 \inheritbackgroundpath[from=chit]
14913 \inheritbehindforegroundpath[from=chit]
14914 }

```

5.5.7 Predefined chit element pictures

```

14915 \DeclareRobustCommand\chit@sep[2][/]{%
14916 \foreach[count=\is] \s in {#2}{%
14917 \ifnum\is>1\relax#1\fi%
14918 \s}}

```

```

/tikz/pics/chit/1 factor
/tikz/pics/chit/2 factors
/tikz/pics/chit/2 factors artillery
/tikz/pics/chit/3 factors
/tikz/pics/chit/4 factors
/tikz/pics/chit/identifier
/tikz/pics/chit/small identifier
/tikz/pics/chit/identifier macro

```

These pictures can be used as the value of `chit` keys.

```

14919 \def\chit@oset#1#2{%
14920 %$\stackrel{\scriptsize #1}{\text{#2}}$%
14921 %$\stackrel{\lower2ex\hbox{\scriptsize #1}}{\text{#2}}$%
14922 %$\overset{\scriptsize #1}{\text{#2}}$%
14923 \tikz[]{%
14924 \node[inner sep=0pt](chit@dd){#2};%
14925 \node[above=-.1ex of chit@dd,inner sep=0pt]{\scriptsize #1};%
14926 }%
14927 }
14928 \tikzset{%
14929 chit/1 factor/.pic={
14930 \chit@dbg{4}{ Chit 1 factor: #1}%
14931 \node[chit/factor,chit/1 factor,pic actions]{#1};},
14932 pics/chit/2 factors/.style args={#1,#2}{%
14933 code={%
14934 \chit@dbg{4}{ Chit 2 factors: #1 and #2}%
14935 \node[chit/factor,chit/2 factors,pic actions]{#1--#2};},
14936 pics/chit/2 factors artillery/.style args={#1,#2,#3}{%
14937 code={
14938 \chit@dbg{4}{ Chit 2 factors w/artillery: '#1' '#2' '#3'}%
14939 \node[chit/factor,chit/2 factors]{%
14940 #1}\chit@oset{#3}{--}{#2}};},
14941 pics/chit/3 factors/.style args={#1,#2,#3}{%
14942 code={
14943 \chit@dbg{4}{ Chit 3 factors: '#1' '#2' '#3'}%
14944 \node[chit/factor,chit/3 factors]{#1-#2-#3};},
14945 pics/chit/4 factors/.style args={#1,#2,#3,#4}{%
14946 code={
14947 \chit@dbg{4}{ Chit 3 factors: '#1' '#2' '#3' '#4'}%
14948 \node[chit/factor,chit/4 factors]{#1-#2-#3-#4};},

```

```

14949 chit/identifier/.pic={
14950   \chit@dbg{4}{ Chit identifier: '#1'}%
14951   \node[chit/identifier,pic actions]{#1};
14952 },
14953 chit/identifiers/.pic={
14954   \chit@dbg{4}{ Chit identifiers: '#1'}%
14955   \node[chit/identifier,pic actions]{\chit@sep{#1}};
14956 },
14957 chit/small identifier/.pic={
14958   \chit@dbg{4}{ Chit small identifier: '#1'}%
14959   \node[chit/small identifier,pic actions]{#1};
14960 },
14961 chit/small identifiers/.pic={
14962   \chit@dbg{4}{ Chit small identifiers: '#1'}%
14963   \node[chit/small identifier,pic actions]{\chit@sep{#1}};
14964 },
14965 chit/identifier macro/.pic={%
14966   \chit@dbg{4}{ Chit identifier macro: \meaning#1}
14967   \edef\chit@i@tmp{#1}
14968   \node[chit/identifier,pic actions]{\chit@i@tmp};},
14969 }

```

```

/tikz/chit/factor
/tikz/chit/1 factor
/tikz/chit/2 factors
/tikz/chit/3 factors
/tikz/chit/4 factors
/tikz/chit/identifier
/tikz/chit/small identifier

```

Styles used by the above pictures. Users can change these as they see fit.

```

14970 \tikzset{%
14971   chit/factor/.style={
14972     shape=rectangle,
14973     font=\sffamily\bfseries\fontsize{12}{14}\selectfont,
14974     anchor=base,
14975     inner sep=0,
14976     %text=pgfstrokecolor,
14977     draw=none,
14978     fill=none,
14979     transform shape,
14980   },
14981   chit/1 factor/.style={},
14982   chit/2 factors/.style={},
14983   chit/3 factors/.style={},
14984   chit/4 factors/.style={text/.append style=\fontsize{10}{12}\selectfont},
14985   chit/identifier/.style={
14986     shape=rectangle,
14987     font=\sffamily\bfseries\fontsize{8}{9}\selectfont,
14988     inner sep=0,
14989     % text=pgfstrokecolor,
14990     draw=none,

```

```

14991     fill=none,
14992     transform shape,
14993   },
14994   chit/small identifier/.style={
14995     shape=rectangle,
14996     font=\sffamily\bfseries\fontsize{6}{7}\selectfont,
14997     inner sep=0,
14998     % text=pgfstrokecolor,
14999     draw=none,
15000     fill=none,
15001     transform shape,
15002   },
15003 }

```

5.5.8 Modifications to chits

These defines overlays one can add on top of chits, for example to shade a chit, put a semi-transparent red cover to indicate elimination, and similar.

```

15004 \tikzset{
15005   pics/chit/shade/.style={
15006     code={%
15007       \path[fill=white,opacity=#1,pic actions] (-.6,-.6) rectangle(.6,.6);}},
15008   pics/chit/eliminate/.style={
15009     code={%
15010       \path[fill=red,opacity=#1,pic actions] (-.6,-.6) rectangle(.6,.6);}},
15011   pics/chit/shade/.default=0.5,
15012   pics/chit/eliminate/.default=0.25,
15013   dummy chit/.style={draw=none,fill=none,chit={}},
15014 }
15015 \def\sh@dechit{%
15016   \ifnextchar[{\sh@dechit}{\sh@dechit[.5]}%
15017 }
15018 \def\elimin@techit{%
15019   \@ifnextchar[{\elimin@techit}{\elimin@techit[.25]}%
15020 }
15021 \def\sh@dechit[#1](#2){%
15022   % \message{^JShading chit with opacity '#1'}%
15023   \pic[transform shape] at (#2) {chit/shade=#1};%
15024   \@ifnextchar;{\@gobble}{}
15025 \def\elimin@techit[#1](#2){%
15026   \pic[transform shape] at (#2) {chit/eliminate=#1};%
15027   \@ifnextchar;{\@gobble}{}

```

5.5.9 Stacking of chits

Stacking of chits. The key `chit/stack direction` sets the default direction to make the stack in.

```

15028 % offset, location, direction, list
15029 \tikzset{
15030   chit/stack direction/.store in=\chit@stack@dir,
15031   chit/stack direction/.initial={(.3,.3)},
15032 }

```

Now the code

```
15033 \def\chit@stack@dir{(.3,.3)}
15034 \def\stackchits{#1}{%
15035   \@ifnextchar({\st@ckchits{#1}}{\st@ckchits{#1}(.3,.3)}%)
15036 }
15037 \def\st@ckchits#1(#2)#3{%
15038   \chit@dbg{2}{Stacking chits '#1', '#2', '#3'}%
15039   \edef\xy{#1}%
15040   \chit@dbg{4}{Stack start at \xy}%
15041   \foreach[count=\i from 0] \c/\o in {#3} {%
15042     \ifx\c\empty\else%
15043       \edef\ccc{\c}%
15044       \chit@dbg{2}{Adding \meaning\ccc\space to stack at (\xy)' '\o'}%
15045       \expandafter\ccc(\xy)%
15046       %%
15047       \ifx\c\o\else%
15048         %\chit@dbg{0}{Option: \o}
15049         \edef\ccc{\o}%
15050         \expandafter\ccc(\xy)%
15051         \fi
15052         \expandafter\ccc(\xy)%
15053         \tikzmath{%
15054           coordinate \cc;%
15055           \cc = (\xy) + (#2);}
15056         \xdef\xy{\cc}%
15057       \fi%
15058   }%
15059   \@ifnextchar;{\@gobble}{}%
15060 }
```

5.5.10 Making order of battle charts

Macros for making OOBs

Style for turns

```
15061 \tikzset{
15062   chit/oob turn/.pic={\node[pic actions]{#1};}}

current c, current r, n-columns, cell size, y

15063 \def\chit@oob@cellupdate(#1,#2)#3#4#5{%
15064   \edef\f{\ifwg@oob@inv-1\else1\fi}%
15065   \chit@dbg{1}{ \space Cell update 'c=|#1|' vs '#4'*('#3'-1)}
15066   \pgfmathparse{int(ifthenelse(abs(#1)>=#4*(#3-1),#5-1,#5))}%
15067   \xdef#5{\pgfmathresult}
15068   \pgfmathparse{ifthenelse(abs(#1)>=#4*(#3-1),#2-#4,#2)}%
15069   \xdef#2{\pgfmathresult}%
15070   \pgfmathparse{ifthenelse(abs(#1)>=#4*(#3-1),0,#1+\f*#4)}%
15071   \xdef#1{\pgfmathresult}%
15072   \chit@dbg{1}{ \space\space-> '\string#5'=#5 '\string#2'=#2 '\string#1'=#1}
15073 }
```

current c, current r, cell size, extra vertical spacing

```
15074 \def\chit@oob@rowupdate(#1,#2)#3#4{%
15075 \chit@dbg{2}{ Row update c='#1',r='#2',s='#3',e='#4'}
15076 %\pgfmathparse{ifthenelse(#1>0,#2-#3,#2)}%
15077 \pgfmathparse{#2-#3-#4}%
15078 \xdef#2{\pgfmathresult}%
15079 \xdef#1{0}\pgfmathresult}%
15080 %\xdef#1{0}
15081 \chit@dbg{2}{ \space\space-> update '\string#2'=#2}
15082 }
```

current c, current r, cell size, extra spacing

```
15083 \def\chit@oob@turnupdate(#1,#2)#3#4{%
15084 \chit@dbg{2}{ Turn update c='#1',r='#2',s='#3',e='#4'}
15085 % \pgfmathparse{#2-ifthenelse(#1>0,#3,0)-#4}%
15086 \pgfmathparse{#2-#4-ifthenelse(abs(#1)>0.0001,#3,0)}
15087 \xdef#2{\pgfmathresult}%
15088 \xdef#1{0}%
15089 \chit@dbg{2}{ \space\space-> update '\string#1'=#1,'\string#2'=#2}
15090 }
```

chit list, n-colls, cell size, extra vertical spacing

This expects a list of lists of chits, one list per turn; the maximum number of columns; the size of cells, extra spacing between turns.

Note, the list of lists leaf elements should be styles for the chits.

This depends on the Tikz pic `chit/oob turn` which takes the number as argument.

```
15091 \newif\ifwg@oob@inv\wg@oob@invfalse
15092 \def\chit@oob@spacer{hspace}
15093 \def\chit@oob@vspacer{vspace}
15094 \def\wg@star@oob{\wg@oob@invtrue\wg@oob}
15095 \def\wg@nostar@oob{\wg@oob@invfalse\wg@oob}
15096 \def\oob{%
15097 \@ifstar{\wg@star@oob%
15098 }{\wg@nostar@oob%
15099 }%
15100 }%
```

The inner macro of `\oob`. The arguments are

1. The list of lists of chits styles
2. The maximum number of columns
3. The width of each cell
4. Additional row spacing between turns

```
15101 \def\wg@oob#1#2#3#4{%
15102 \def\r{0}%
15103 \pgfmathparse{#3*(#2-1)}%
15104 \edef\a{\pgfmathresult}%

```

```

15105 \chit@dbg{2}{00B: '#1'}%
15106 \foreach[count=\ti from 0] \t/\y in #1{%
15107   \xdef\o{\r}%
15108   \def\c{0}%
15109   \ifx\t\y\def\y{0}\fi%
15110   \chit@dbg{2}{Turn \ti\space(\r,\t,y=\y):'}%
15111   \ifwg@oob@inv%
15112     \pic[transform shape] at (.5*#3,\r) {chit/oob turn=\ti};% was dx=0.5
15113   \else%
15114     \pic[transform shape] at (-.5*#3,\r) {chit/oob turn=\ti};% was dx=-0.5
15115   \fi%
15116   \ifx\t@empty\else%
15117     \foreach \u/\m in \t{%
15118       %% \chit@dbg{2}{'\u'='\m'}
15119       \ifx\u@empty\else%
15120         \ifx\m@empty\def\m{1}\fi%
15121         \ifx\u\m\def\m{1}\fi%
15122         \foreach \n in {1,...,\m}{%
15123           \chit@dbg{2}{00B Chit is '\u' '\chit@oob@spacer'}%
15124           \ifx\u\chit@oob@spacer%
15125             \chit@dbg{3}{Chit '\u' is spacer '\chit@oob@spacer'}
15126             \pgfmathparse{\c+#4}%
15127             \xdef\c{\pgfmathresult}%
15128           \else%
15129             \ifx\u\chit@oob@vspacer%
15130               \chit@dbg{3}{Chit '\u' is vspacer '\chit@oob@vspacer'}%
15131               \pgfmathparse{ifthenelse(abs(\c)<0.0001,0,#3)}%
15132               \xdef\ll{\pgfmathresult}%
15133               \chit@dbg{2}{\string\ll='\ll'}%
15134               \chit@oob@rowupdate(\c,\r){\ll}{#4}%
15135             \else
15136               \ifnum\chitdbglvl>2%
15137                 \node[minimum width=#3cm,minimum height=#3cm,
15138                   draw,transform shape] at (\c,\r) {};%
15139               \fi
15140               \ifx\u\chit@blank\else%
15141                 \chit[\u=\ti,zone oob point={\u}{\c}{\r}](\c,\r);%
15142               \fi%
15143               \chit@oob@cellupdate(\c,\r){#2}{#3}{\y}%
15144             \fi%
15145           \fi%
15146         }%
15147       \fi%
15148     }%
15149   \fi%
15150 \chit@dbg{1}{ End of chits in turn
15151   \ti\space(c='\c',r='\r',o='\o',y='\y')}%
15152 % IF no units where given, then we force \c to be non-zero so that
15153 % \chit@oob@turnupdate increments the row
15154 \ifx\t@empty%
15155   \def\c{#3}%
15156   \chit@dbg{2}{ Turn is empty, set c='\c'}%
15157 \fi

```

```

15158 %\ifnum\y<0% No explicit number of rows given
15159 % \def\c{#3}
15160 % \chit@dbg{2}{ No explicit number of rows given, set c='\c'}
15161 %\fi
15162 % In case the user gave and explicit number of rows, add the rows
15163 % that are missing. \y is initially set to the number of
15164 % requested rows, and then decremented every time we go down one
15165 % row. So if the number of rows we did so far is N, and the
15166 % requested number of rows is M, then the loop below adds M-N
15167 % rows.
15168 \ifnum\y>0%
15169 \chit@dbg{2}{ Looping rows from 2 to \y, break when row > \y}%
15170 \foreach \rr in {2,...,\y}{%
15171 %\ifnum\rr>\y% A little funny, but \y can be negative!
15172 % \chit@dbg{2}{ \space Breaking loop \rr\space > \y}%
15173 % \breakforeach%
15174 %\else%
15175 \chit@oob@rowupdate(\c,\r){#3}{0}% Extra spacing?
15176 %\fi
15177 }%
15178 \fi%
15179 % This will zero \c. However, if on entry |\c|>0, then we also
15180 % increment the row
15181 \chit@oob@turnupdate(\c,\r){#3}{#4}%
15182 \chit@dbg{2}{End of turn \ti\space(c='\c',r='\r',o='\o',y='\y')}%
15183 }
15184 \chit@dbg{3}{End of OOB (c='\c',r='\r',y='\y')}%
15185 \@ifnextchar;{\@gobble}{}}%

```

Horizontal flow OOB

```

15186 \def\wg@star@hoob{\wg@oob@invtrue\wg@hoob}
15187 \def\wg@nostar@hoob{\wg@oob@invfalse\wg@hoob}
15188 \def\hoob{%
15189 \@ifstar{\wg@star@hoob%
15190 }{\wg@nostar@hoob%
15191 }%
15192 }

```

The inner macro of \hoob. The arguments are

1. The list of lists of chits styles
2. The maximum number of columns
3. The width of each cell
4. Additional row spacing between turns

```

15193 \def\wg@hoob#1#2#3#4{%
15194 \def\r{0}%
15195 \def\c{0}%
15196 \pgfmathparse{#3*(#2-1)}%
15197 \edef\a{\pgfmathresult}%
15198 \chit@dbg{2}{OOB: '#1'}%

```

```

15199 \foreach[count=\ti from 0] \t/\y in #1{%
15200   \xdef\o{\r}%
15201   % \def\c{0}
15202   \ifx\t\y\def\y{0}\fi%
15203   \chit@dbg{2}{Turn \ti\space(\r,\t,y=\y):'}
15204   \ifx\t\empty\else%
15205     % Count how many are left for this turn
15206     \chit@dbg{2}{At start of turn \t\space\string\c=\c}%
15207     \def\l{\c}%
15208     \let\ig\empty%
15209     \foreach \u/\m in \t{%
15210       \ifx\ig\empty%
15211         \ifx\u\empty\else%
15212           \ifx\u\m\def\m{1}\fi%
15213           \ifx\u\chit@oob@spacer%
15214             \pgfmathparse{\l+\m**4}\xdef\l{\pgfmathresult}%
15215             \chit@dbg{2}{Got \m\space hspace (#4) -> \l}%
15216           \else%
15217             \ifx\u\chit@oob@vspace%
15218               \xdef\ig{1}%
15219               \chit@dbg{2}{Got vspace -> \l (\ig)}%
15220             \else%
15221               \pgfmathparse{\l+\m**3}%
15222               \xdef\l{\pgfmathresult}%
15223               \chit@dbg{2}{Got \m\space units -> \l}%
15224             \fi%
15225           \fi%
15226         \fi%
15227       \fi}%
15228     % Check if there's enough room
15229     \chit@dbg{2}{To fill the rest of turn needs '\l' compared to
15230     'a' (#3*(#2-1))}%
15231     \pgfmathparse{ifthenelse(abs(\l)>=#3*(#2-1),0,1)}%
15232     \xdef\l{\pgfmathresult}%
15233     \chit@dbg{2}{Break or not '\l'}%
15234     \ifnum\l=0\chit@oob@turnupdate(\c,\r){#3}{#4}\fi%
15235   \fi%
15236   \ifwg@oob@inv%
15237     \pic[transform shape] at (\c+.5*#3,\r) {chit/oob turn=\ti};% was dx=0.5
15238   \else
15239     \pic[transform shape] at (\c+-.5*#3,\r) {chit/oob turn=\ti};% was dx=-0.5
15240   \fi%
15241   %\chit@oob@cellupdate(\c,\r){#2}{#3}{\y}
15242   \ifx\t\empty\else%
15243     \def\lv{0}%
15244     \foreach \u/\m in \t{%
15245       %% \chit@dbg{2}{ '\u'='\m'}
15246       \ifx\u\empty\else%
15247         \ifx\m\@empty\def\m{1}\fi%
15248         \ifx\u\m\def\m{1}\fi%
15249         \foreach \n in {1,...,\m}{%
15250           \chit@dbg{2}{OOB Chit is '\u' '\chit@oob@spacer'}%
15251         \ifx\u\chit@oob@spacer%

```

```

15252     \chit@dbg{3}{Chit 'u' is spacer '\chit@oob@spacer'}%
15253     \pgfmathparse{\c+#4}%
15254     \xdef\c{\pgfmathresult}%
15255   \else%
15256     \ifx\u\chit@oob@vspacer%
15257       \chit@dbg{3}{Chit 'u' is vspacer '\chit@oob@vspacer'}%
15258       \pgfmathparse{ifthenelse(abs(\c)<0.0001,0,#3)}%
15259       \xdef\ll{\pgfmathresult}%
15260       \chit@dbg{2}{\string\ll='\ll'}%
15261       \chit@oob@rowupdate(\c,\r){\ll}{#4}%
15262       \xdef\lv{1}%
15263     \else
15264       \ifnum\chitdbglvl>2%
15265         \node[minimum width=#3cm,minimum height=#3cm,
15266               draw,transform shape] at (\c,\r) {};%
15267       \fi%
15268       \ifx\u\chit@blank\else%
15269         \chit[\u=\ti,zone oob point={\u}{\c}{\r}](\c,\r);%
15270       \fi%
15271       \chit@oob@cellupdate(\c,\r){#2}{#3}{\y}
15272     \fi%
15273   \fi%
15274 }%
15275 \fi%
15276 }%
15277 \fi%
15278 \chit@dbg{2}{ End of chits in turn
15279   \ti\space(c='c',r='r',o='o',y='y')}%
15280 % --- Not relevant, I think
15281 % IF no units where given, then we force \c to be non-zero so that
15282 % \chit@oob@turnupdate increments the row
15283 % \ifx\t\empty
15284 %   \def\c{#3}
15285 %   \chit@dbg{2}{ Turn is empty, set c='c'}
15286 % \fi
15287 % ---
15288 %\ifnum\y<0% No explicit number of rows given
15289 %   \def\c{#3}
15290 %   \chit@dbg{2}{ No explicit number of rows given, set c='c'}
15291 %\fi
15292 % In case the user gave and explicit number of rows, add the rows
15293 % that are missing. \y is initially set to the number of
15294 % requested rows, and then decremented every time we go down one
15295 % row. So if the number of rows we did so far is N, and the
15296 % requested number of rows is M, then the loop below adds M-N
15297 % rows.
15298 \ifnum\y>0%
15299   \chit@dbg{2}{ Looping rows from 2 to \y, break when row > \y}%
15300   \foreach \rr in {2,...,\y}{%
15301     %\ifnum\rr>\y% A little funny, but \y can be negative!
15302     % \chit@dbg{2}{ \space Breaking loop \rr\space > \y}%
15303     % \breakforeach%
15304   %\else%

```

```

15305     \chit@oob@rowupdate(\c,\r){#3}{0}% Extra spacing?
15306     %\fi
15307     }
15308     \fi%
15309     % --- Not relevant I think
15310     % This will zero \c. However, if on entry |\c|>0, then we also
15311     % increment the row
15312     % \chit@oob@turnupdate(\c,\r){#3}{#4}
15313     % ---
15314     % Horizontal spacer
15315
15316     %\pgfmathparse{ifthenelse(abs(\c)>=\a,1,0)}\xdef\l{\pgfmathresult}
15317     \pgfmathparse{\c+1.5*#4}%
15318     \xdef\c{\pgfmathresult}%
15319     \ifnum\lv=1%
15320         \pgfmathparse{\r-#4}
15321         \chit@oob@rowupdate(\c,\r){0}{#4}
15322     \else
15323         \chit@oob@cellupdate(\c,\r){#2}{#3}{\y}
15324         \ifnum\y<0
15325             \chit@oob@turnupdate(\c,\r){#3}{#4}
15326         \else
15327             \fi
15328     \fi
15329     % \xdef\y{0}
15330     \chit@dbg{2}{End of turn \ti\space(c='c',r='r',o='o',y='y')}%
15331 }%
15332 \chit@dbg{3}{End of OOB (c='c',r='r',y='y')}%
15333 \@ifnextchar;{\@gobble{}}%

```

5.5.11 Table of chits

```

15334 \tikzset{
15335   chit/cell background/.style={draw=black},
15336   %% Define to not dp anything to disable wings
15337   chit/cell wings/.style={
15338     dashed,
15339     dash pattern=on 0pt off 3pt on 3pt off 0pt,
15340     draw=black},
15341   %chit/cell background flipped/.style={fill=black},
15342   blank chit/.style={/chit/frame={draw=none,fill=none}},
15343   chit/grid lines/.style={dashed},
15344 }

```

These macros are used when we set tables of chits. This allows us to define blank spaces in the table by giving the element blank chit.

```

15345 \def\chit@blank{blank chit}
15346 \def\chit@cellbg(#1,#2)#3{%
15347   \draw[chit/cell background] (#1-#3/2,#2-#3/2) rectangle++(#3,#3);
15348 }
15349 \def\chit@celldbldbg(#1,#2)#3{%
15350   \draw[chit/cell background,chit/cell background flipped/.try]
15351     (#1-#3/2,#2-#3/2) rectangle++(#3,#3);

```

15352 }

`\ifchits@reset`

This ‘if’ controls whether to reset the coordinates to the origin when `\chits` is called. If true, then reset for a new table.

```
15353 \newif\ifchits@reset\chits@resettrue
```

1. column
2. row
3. width
4. number of columns

`\chits` `\@chits` `\chit@sng@cellupdate`

```
15354 \def\chit@sng@cellupdate(#1,#2)#3#4{%  
15355 \chit@dbg{2}{Current ‘#1’ vs ‘#4’*(‘#3’+1)}  
15356 \pgfmathparse{ifthenelse(#1>=#4*(#3-1),#2-#4,#2)}%  
15357 \xdef#2{\pgfmathresult}%  
15358 \pgfmathparse{ifthenelse(#1>=#4*(#3-1),0,#1+#4)}%  
15359 \xdef#1{\pgfmathresult}%  
15360 }
```

```
15361 \def\chit@cell@frame#1#2{%  
15362 \coordinate(cell@frame@north east) at ($(#1.north east)+( #2/2, #2/2)$);  
15363 \coordinate(cell@frame@north west) at ($(#1.north west)+(-#2/2, #2/2)$);  
15364 \coordinate(cell@frame@south east) at ($(#1.south east)+( #2/2,-#2/2)$);  
15365 \coordinate(cell@frame@south west) at ($(#1.south west)+(-#2/2,-#2/2)$);  
15366 \draw[chit/cell background,fill=none,scale line widths,line width=#2cm]  
15367 (cell@frame@south west) rectangle (cell@frame@north east);  
15368 \draw[scale line widths,line width=#2cm,chit/cell wings=10pt,fill=none,scale line widths,line width=#2cm]  
15369 (cell@frame@north east)--++( 0,10*#2)  
15370 (cell@frame@north east)--++( 10*#2,0)  
15371 (cell@frame@north west)--++( 0,10*#2)  
15372 (cell@frame@north west)--++(-10*#2,0)  
15373 (cell@frame@south east)--++( 0,-10*#2)  
15374 (cell@frame@south east)--++( 10*#2,0)  
15375 (cell@frame@south west)--++( 0,-10*#2)  
15376 (cell@frame@south west)--++(-10*#2,0)  
15377 ;  
15378 }
```

The starred version (`\chits*`) of this macro continues the previously set chit table.

```
15379 \def\chits{%  
15380 \@ifstar{\chits@resetfalse\@chits}{\chits@resettrue\@chits}}
```

1. Chits. List (or list of list) of chit styles.
2. Number of columns
3. Size of cells

```

15381 \newcount\wg@col
15382 \newcount\wg@row
15383 \def\@chits#1#2#3{
15384   \ifchits@reset
15385     %\def\r{0}%
15386     %\def\c{0}%
15387     \coordinate(wg@next) at (0,0);
15388     \wg@col=1
15389     \wg@row=1
15390   \fi
15391   \chit@dbg{1}{Chits to make: #1}%
15392   \foreach[count=\ti from 0] \t/\x in #1{%
15393     \chit@dbg{2}{Turn '\t' with option '\x'}
15394     \ifx\t\empty\else%
15395       \foreach \u/\m in \t{%
15396         \ifx\u\empty\else%
15397           \chit@dbg{2}{Next chit '\u' with possible multiplicity '\m'}%
15398           \ifx\m\empty\def\m{1}\fi%
15399           \ifx\u\m\def\m{1}\fi%
15400           \chit@dbg{2}{Next chit '\u' multiplicity '\m'}%
15401           \foreach \n in {1,...,\m}{%
15402             \ifx\u\chit@blank%
15403               \chit@dbg{3}{Ignoring blank chit:\u}%
15404             \else%
15405               \ifx\u\chit@oob@vspacer%
15406                 \chit@dbg{3}{Ignoring vertical spacer:\u}%
15407               \else
15408                 \ifx\u\chit@oob@spacer%
15409                   \chit@dbg{3}{Ignoring horizontal spacer:\u}%
15410                 \else
15411                   % \chit@cellbg(\c,\r){#3}%
15412                   %\chit[\u=\ti](\c,\r)%
15413                   \chit[\u=\ti](wg@next)(wg@chit)%
15414                   \chit@cell@frame{wg@chit}{#3}
15415                   \global\advance\wg@col1
15416                   \ifnum\wg@col>#2%
15417                     \path
15418                     let
15419                       \p1=(wg@chit.north),
15420                       \p2=(wg@chit.south),
15421                       \p3=(wg@chit),
15422                       \n1={\y3-\y1+\y2-#3cm} in
15423                       coordinate(wg@next) at (0,\n1);
15424                   \global\wg@col=1
15425                   \global\advance\wg@row1
15426                   \chit@dbg{10}{Row row, next column '\the\wg@col'}
15427                 \else
15428                 \path

```

```

15429         let
15430             \p1=(wg@chit.east),
15431             \p2=(wg@chit.west),
15432             \p3=(wg@chit),
15433             \n1={\x3+\x1-\x2+#3cm} in
15434             coordinate(wg@next) at (\n1,\y3);
15435             \chit@dbg{10}{Next column '\the\wg@col'}
15436         \fi
15437         %\chit@sng@cellupdate(\c,\r){#2}{#3}%
15438     \fi%
15439 \fi%
15440 \fi%
15441 }%
15442 \fi%
15443 }%
15444 \fi%
15445 }%
15446 \chit@dbg{10}{Table is '\the\wg@col'x'\the\wg@row'}
15447 \@ifnextchar;{\@gobble{}}

```

\chitgrid

1. columns
2. rows
3. cell-size

```

15448 \def\chitgrid#1#2#3{%
15449     \pgfmathparse{#3/2}\edef\rmin{\pgfmathresult}%
15450     \pgfmathparse{#2*#3-#3/2}\edef\rmax{\pgfmathresult}%
15451     \draw[red](-#3/2,\rmin)rectangle(#3*#1-#3/2,-\rmax);
15452     \foreach \cc in {0,...,#1}{
15453         \draw[chit/grid lines] (\cc*#3-#3/2,3*#3/4)--(\cc*#3-#3/2,-\rmax-#3/4);}
15454     %\chit@dbg{0}{Drawing horizontal lines from '\rmin', '-\rmin', ..., '-\rmax'}
15455     \foreach \rr in {\rmin,-\rmin,...,-\rmax}{
15456         %\chit@dbg{0}{Horizontal line at '\rr'}
15457         \draw[chit/grid lines] (-3*#3/4,\rr)--(#1*#3-#3/4,\rr);}
15458 }

```

```

\doublechits
\@doublechits
\chit@dbl@cellupdate
\chit@dbl@flip

```

1. coordinates
2. coordinates
3. cell-size

```

15459 \def\chit@dbl@flip(#1,#2)#3{%
15460   \pgfmathparse{-#1}%
15461   \xdef\mc{\pgfmathresult}%
15462 }

```

1. coordinates
2. coordinates
3. Number of columns
4. cell-size

```

15463 \def\chit@dbl@cellupdate(#1,#2)#3#4{%
15464   \pgfmathparse{ifthenelse(#1<=#4/2,#2,#4+#2)}%
15465   \xdef#2{\pgfmathresult}%
15466   \pgfmathparse{ifthenelse(#1<=#4/2,#4+#1,-(#3-.5)*#4)}%
15467   \xdef#1{\pgfmathresult}%
15468 }

```

1. List of list of keys
2. Number of columns
3. size of each cell

The starred version (`\doublechits*`) of this macro continues the previously set `chit` table.

```

15469 \def\doublechits{%
15470   \@ifstar{\chits@resetfalse\@doublechits}{\chits@resettrue\@doublechits}}

```

1. List (or list of list) of counters
2. Max number columns (for front)
3. Extra spacing

```

15471 \newdimen\chit@w
15472 \newdimen\chit@h
15473 \def\@doublechits#1#2#3{%
15474   \chit@dbg{1}{Setting double-sided chits: #1}
15475   \ifchits@reset%
15476     \pgfmathparse{-(#2-.5)*#3}
15477     \xdef\c{\pgfmathresult}
15478     \def\r{0}
15479     \coordinate(wg@next) at (0,0);%
15480     \coordinate(wg@fnxt) at (0,0);%
15481     \wg@col=1%
15482     \wg@row=1%
15483     \chit@w=0pt%
15484     \chit@h=0pt%
15485   \fi%
15486   %
15487   \foreach[count=\ti from 0] \t/\x in #1{

```

```

15488 \ifx\t\empty\else%
15489 \foreach \u/\m in \t{
15490 \ifx\u\empty\else
15491 \ifx\m\@empty\def\m{1}\else%
15492 \ifx\u\m\def\m{1}\fi\fi
15493 \chit@dbg{2}{'\u'='\m' (\c,\r)}
15494 \foreach \n in {1,...,\m}{%
15495 \ifx\u\chit@blank
15496 \chit@dbg{3}{Ignoring blank chit:\u}
15497 \else
15498 \ifx\u\chit@oob@vspacer%
15499 \chit@dbg{3}{Ignoring vertical spacer:\u}%
15500 \else
15501 \ifx\u\chit@oob@spacer%
15502 \chit@dbg{3}{Ignoring horizontal spacer:\u}%
15503 \else
15504 \chit@dbg{10}{Drawing '\u' at wg@next}
15505 \chit[\u=\ti](wg@next)(wg@chit)%
15506 \chit@cell@frame{wg@chit}{#3}
15507 \ifdim\chit@w=0pt
15508 \pgfextractx\chit@w{\pgfpointanchor{wg@chit}{east}}%
15509 \pgfextractx\wg@tmpa{\pgfpointanchor{wg@chit}{west}}%
15510 \advance\chit@w-\wg@tmpa%
15511 \global\advance\chit@w#3cm%
15512 \pgfextracty\chit@h{\pgfpointanchor{wg@chit}{north}}%
15513 \pgfextracty\wg@tmpa{\pgfpointanchor{wg@chit}{south}}%
15514 \advance\chit@h-\wg@tmpa%
15515 \global\advance\chit@h#3cm%
15516 \fi
15517 \ifnum\wg@col=1
15518 \pgfextractx\wg@tmpa{\pgfpointanchor{wg@chit}{center}}%
15519 \advance\wg@tmpa+\chit@w%
15520 \coordinate(wg@fnxt) at ($(wg@chit)+(\the\chit@w,0pt)$);
15521 %\coordinate(wg@fnxt
15522 %\chit@dbg{10}{Calculating wg@fnxt since '\the\wg@col'==1}
15523 %\path
15524 %let
15525 %\p1=(wg@chit.east),
15526 %\p2=(wg@chit.west),
15527 %\p3=(wg@chit),
15528 %\n1={\x3+\x1-\x2+#3cm} in
15529 %coordinate(wg@fnxt) at (\n1,\y3);
15530 \fi
15531 %\chit@dbg{10}{Drawing '\u\space flipped' at wg@fnxt}
15532 \chit[\u\space flipped=\ti,
15533 zone turn=\t,
15534 zone mult=\n](wg@fnxt)(wg@flip)%
15535 \chit@cell@frame{wg@flip}{#3}
15536 \chit@dbg{10}{Next column: '\the\wg@col'}
15537 \ifnum\wg@col=1
15538 \ifnum\wg@row=1
15539 \coordinate(wg@table@top) at (wg@chit.north east);
15540 \fi

```

```

15541         \coordinate(wg@table@bot) at (wg@chit.south east);
15542     \fi
15543     \global\advance\wg@col1
15544     \ifnum\wg@col>#2%
15545         % \path
15546         %   let
15547         %     \p1=(wg@chit.north),
15548         %     \p2=(wg@chit.south),
15549         %     \p3=(wg@chit),
15550         %     \n1={\y3-\y1+\y2-#3cm} in %1.21991
15551         %     coordinate(wg@next) at (0,\n1);
15552         \coordinate(wg@next) at (0,-\wg@row\chit@h);
15553         \global\wg@col=1
15554         \global\advance\wg@row1
15555         \chit@dbg{10}{Row row, next column '\the\wg@col'}
15556     \else
15557         % \path
15558         %   let
15559         %     \p1=(wg@chit.east),
15560         %     \p2=(wg@chit.west),
15561         %     \p3=(wg@chit),
15562         %     \p4=(wg@flip.east),
15563         %     \p5=(wg@flip.west),
15564         %     \p6=(wg@flip),
15565         %     \n1={\x3-\x1+\x2-#3cm},
15566         %     \n2={\x6+\x4-\x5+#3cm} in
15567         %     coordinate(wg@next) at (\n1,\y3)
15568         %     coordinate(wg@fnxt) at (\n2,\y6);
15569         \coordinate(wg@next) at ($(wg@chit)+(-\the\chit@w,0)$);
15570         \coordinate(wg@fnxt) at ($(wg@flip)+(\the\chit@w,0)$);
15571         \chit@dbg{10}{Next column '\the\wg@col'}
15572     \fi
15573 \fi%
15574 \fi%
15575 \fi%
15576 }%
15577 \fi%
15578 }%
15579 \fi%
15580 }%
15581 \draw[dashed,scale line widths](wg@table@top)---+(0,.4);
15582 \draw[dashed,scale line widths](wg@table@bot)---+(0,-.4);
15583 \draw[dashed,scale line widths,{Stealth[]}-]
15584 ($(wg@table@top)+(0,.2)$) -- ++(.5,0)
15585 node[transform shape,anchor=west]{Back};
15586 \draw[dashed,scale line widths,{Stealth[]}-]
15587 ($(wg@table@top)+(0,.2)$) -- ++(-.5,0)
15588 node[transform shape,anchor=east]{Front};
15589 \draw[dashed,scale line widths,{Stealth[]}-]
15590 ($(wg@table@bot)+(0,-.2)$) -- ++(.5,0)
15591 node[transform shape,anchor=west]{Back};
15592 \draw[dashed,scale line widths,{Stealth[]}-]
15593 ($(wg@table@bot)+(0,-.2)$) -- ++(-.5,0)

```

```

15594 node[transform shape,anchor=east]{Front};
15595 % \draw[dashed,<-] (#3/5,-2*#3/3)--(#3/2,-2*#3/3) node[transform shape,anchor=west]{Back};%
15596 % \draw[dashed,<-] (-#3/5,-2*#3/3)--(-#3/2,-2*#3/3) node[transform shape,anchor=east]{Front};%
15597 % \foreach \cc in {0,...,#2}{
15598 %   \draw[dashed] (\cc*#3,-3*#3/4)--(\cc*#3,\r-#3/4);
15599 %   \draw[dashed] (-\cc*#3,-3*#3/4)--(-\cc*#3,\r-#3/4);}
15600 % \pgfmathparse{#3/2}\edef\rmin{\pgfmathresult}%
15601 % \chit@dbg{0}{Drawing horizontal lines from '-\rmin', '\rmin', ..., '\r'}
15602 % \foreach \rr in {-\rmin,\rmin,...,\r}{
15603 %   \chit@dbg{0}{Horizontal line at '\rr'}
15604 %   \draw[dashed] (-#2*#3-#3/4,\rr)--(#2*#3+#3/4,\rr);}
15605 \@ifnextchar{;\@gobble}{}}

```

\doublechitgrid

1. columns
2. rows
3. cell-size

```

15606 \def\doublechitgrid#1#2#3{%
15607   \message{^^JWARNING - the grid table might be messed up!}
15608   %\iffalse
15609   \pgfmathparse{#3/2}\edef\rmin{\pgfmathresult}%
15610   \pgfmathparse{#2*#3-#3/2}\edef\rmax{\pgfmathresult}%
15611   \foreach \cc in {0,...,#1}{
15612     \draw[chit/grid lines] (\cc*#3+\rmin,3*#3/4)--(\cc*#3+\rmin,-\rmax-#3/4);
15613     \draw[chit/grid lines] (-\cc*#3+\rmin,3*#3/4)--(-\cc*#3+\rmin,-\rmax-#3/4);}
15614   %\chit@dbg{0}{Drawing horizontal lines from '-\rmin', '\rmin', ..., '\rmax'}
15615   \foreach \rr in {\rmin,-\rmin,...,-\rmax}{
15616     \chit@dbg{0}{Horizontal line at '\rr'}
15617     \draw[chit/grid lines] (-#1*#3-#3/4+\rmin,\rr)--(#1*#3+#3/4+\rmin,\rr);}
15618   %\fi
15619 }

```

5.5.12 Battle markers

Takes 1 arguments - the identifier.

Define every battle marker to change the style.

```

15620 \tikzset{%
15621   battle marker/.pic={
15622     \node[shape=circle,
15623       font=\sffamily\bfseries,
15624       inner sep=0pt,
15625       minimum size=5mm,
15626       draw=black,
15627       fill=yellow!85!black,
15628       every battle marker/.try] at (-.3,.3) {%
15629     \ifnum#1>0\relax #1\fi%

```

```

15630   };
15631   },
15632   battle marker/.style={
15633     chit={full={battle marker=#1},frame={draw=none}}},
15634 }

```

Takes two arguments - the odds and the fill colour. The latter is useful to differentiate the severity of an attack. Define every odds marker to change the style.

```

15635 \tikzset{%
15636   pics/odds marker/.style args={#1,#2}{
15637     code={
15638       \node[shape=circle,
15639         font=\sffamily\bfseries\large,
15640         inner sep=0pt,
15641         minimum size=8mm,
15642         draw=black,
15643         fill=#2,
15644         every odds marker/.try] at (.16,-.16) {#1};
15645     }
15646   },
15647   odds marker/.style args={#1,#2}{
15648     chit={full={odds marker={#1,#2}},frame={draw=none}}},
15649 }

```

Takes two arguments - the result and the fill colour. The latter is useful to differentiate the severity of an attack. Define every result marker to change the style.

```

15650 \tikzset{
15651   pics/result marker/.style args={#1,#2}{
15652     code={
15653       \chit@dbg{3}{Results marker #1 (#2)}
15654       \node[shape=circle,
15655         font=\sffamily\bfseries\large,
15656         inner sep=0pt,
15657         minimum size=8mm,
15658         draw=black,
15659         fill=#2,
15660         every result marker/.try] at (0,0) {#1};}},
15661   result marker/.style args={#1,#2}{
15662     chit={full={result marker={#1,#2}},frame={draw=none}}
15663 }

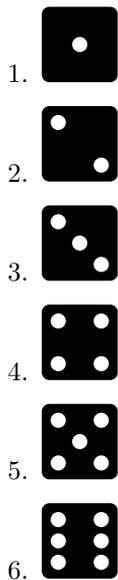
```

5.5.13 Dice

First, a regular 6-sided dice with configurable number of dots. Use like

```
\pic[pic options]{dice=eyes}
```

For example:



```

15664 \tikzset{
15665   dice bg/.style={
15666     % /utils/exec={
15667     %   \pgfgettransformentries{%
15668     %     \wg@jaca}{%
15669     %     \wg@jacb}{%
15670     %     \wg@jacc}{%
15671     %     \wg@jacd}{%
15672     %     \wg@tmp}{%
15673     %     \wg@tmp}%
15674     %   \pgfmathsetmacro{\wg@tmp}{%
15675     %     sqrt(abs(\wg@jaca*\wg@jacd-\wg@jacb*\wg@jacc))}
15676     %   \xdef\wg@tmp{\wg@tmp}};%
15677     fill=black,
15678     draw=none,
15679     minimum width=1cm,
15680     minimum height=1cm,
15681     scale rounded corners,
15682     rounded corners=.1cm,
15683     inner sep=0pt,
15684     transform shape},
15685   dice fg/.style={
15686     fill=white,
15687     shape=circle,
15688     inner sep=0pt,
15689     minimum size=.2cm,
15690     transform shape},
15691   pics/dice/.style={
15692     code={
15693       \node[dice bg] (dice bg) {};
15694       \ifodd#1\node[dice fg] at (dice bg) {};\fi
15695       \ifnum#1>1%
15696       \node[dice fg] at ($(dice bg)+(-45:.4)$){};%

```

```

15697     \node[dice fg] at ($(dice bg)+(135:.4)$){};%
15698     \fi%
15699     \ifnum#1>3%
15700     \node[dice fg] at ($(dice bg)+( 45:.4)$){};%
15701     \node[dice fg] at ($(dice bg)+(-135:.4)$){};%
15702     \fi%
15703     \ifnum#1=6%
15704     \node[dice fg] at ($(dice bg)+(-.282,0)$){};
15705     \node[dice fg] at ($(dice bg)+(.282,0)$){};
15706     \fi
15707   }
15708 },
15709 pics/dice/.default=3
15710 }
15711 \newcommand\dicemark[2][scale=.5]{%
15712 \tikz[baseline={($(dice bg.south east)!.25!(dice bg.north east)$)},#1]{
15713 \pic[transform shape]{dice=3};}}

```

Now some shapes of different dice. This was originally done by [David Carlisle](#). Usage is for example

```
\node[shape=<dice>,<node options>] {<value>};
```

where *<dice>* is one of d4, d6, d8, d10, d12, or d20.

Tetrahedron



```

15714 \pgfdeclareshape{d4}{
15715 \anchor{center}{\pgfpointorigin} % within the node, (0,0) is the center
15716 \anchor{text}{
15717 % this is used to center the text in the node
15718 \pgfpoint{-.5\wd\pgfnodeparttextbox}{-.5\ht\pgfnodeparttextbox}}
15719 \backgroundpath{ % draw border
15720 \pgfpathmoveto{\pgfpoint{0cm}{.4cm}}
15721 \pgfpathlineto{\pgfpoint{.433cm}{-.35cm}}
15722 \pgfpathlineto{\pgfpoint{-.433cm}{-.35cm}}
15723 \pgfpathlineto{\pgfpoint{0cm}{.4cm}}
15724 % \pgfusepath{draw} %draw border
15725 % \pgfusepath{draw} %draw rectangle
15726 }}

```

Cubic



```

15727 \newif\ifwg@dsixdot\wg@dsixdotfalse
15728 \tikzset{
15729 d6 dots/.is if=wg@dsixdot,
15730 d6 dots/.initial=false,
15731 d6 dots/.default=true
15732 }
15733 \pgfdeclareshape{d6}{

```

```

15734 \anchor{center}{\pgfpointorigin} % within the node, (0,0) is the center
15735 \anchor{text}{
15736 % this is used to center the text in the node
15737 \pgfpoint{-.5\wd\pgfnodeparttextbox}{-.5\ht\pgfnodeparttextbox}}
15738 \backgroundpath{ % draw border
15739 \pgfpathrectanglecorners{\pgfpoint{.4cm}{.4cm}}{\pgfpoint{-.4cm}{-.4cm}}
15740 % \pgfusepath{draw} %draw rectangle
15741 }
15742 \behindforegroundpath{ % draw border
15743 \ifwg@dsixdot%
15744 \edef\numdots{\tikz@node@content}%
15745 % Draw over text
15746 \pgfpathrectanglecorners{\pgfpoint{.4cm}{.4cm}}{\pgfpoint{-.4cm}{-.4cm}}%
15747 \pgfusepath{fill} %draw rectangle
15748 \ifx\tikz@textcolor\pgfutil@empty%
15749 \pgfutil@colorlet{.}{pgfstrokecolor}%
15750 \else
15751 % \pgfsetfillcolor{\tikz@textcolor}%
15752 \pgfutil@colorlet{.}{\tikz@textcolor}%
15753 \fi
15754 \pgfsetfillcolor{.}%
15755 \ifodd\numdots
15756 %\message{^^JCenter dot}
15757 \pgfpathcircle{\pgfpoint{0cm}{0cm}}{.09cm}
15758 \fi
15759 \ifnum\numdots=2%
15760 %\message{^^JSpecial 2}
15761 \pgfpathcircle{\pgfpointpolar{-45}{.32cm}}{.09cm}
15762 \pgfpathcircle{\pgfpointpolar{135}{.32cm}}{.09cm}
15763 \fi%
15764 \ifnum\numdots>2%
15765 %\message{^^JAt least 2}
15766 \pgfpathcircle{\pgfpointpolar{-45}{.35cm}}{.09cm}
15767 \pgfpathcircle{\pgfpointpolar{135}{.35cm}}{.09cm}
15768 \fi%
15769 \ifnum\numdots>3%
15770 %\message{^^JAt least 4}
15771 \pgfpathcircle{\pgfpointpolar{ 45}{.35cm}}{.09cm}
15772 \pgfpathcircle{\pgfpointpolar{-135}{.35cm}}{.09cm}
15773 \fi%
15774 \ifnum\numdots=6%
15775 %\message{^^JLucky 6}
15776 \pgfpathcircle{\pgfpoint{-.247cm}{0cm}}{.09cm}
15777 \pgfpathcircle{\pgfpoint{ .247cm}{0cm}}{.09cm}
15778 \fi
15779 \pgfusepath{fill} %draw rectangle
15780 \fi%
15781 }
15782 }

```

Octahedron



```
15783 \pgfdeclareshape{d8}{
15784   \anchor{center}{\pgfpointorigin}    % within the node, (0,0) is the center
15785   \anchor{text}{
15786     % this is used to center the text in the node
15787     \pgfpoint{-.5\wd\pgfnodeparttextbox}{-.5\ht\pgfnodeparttextbox}}
15788   \backgroundpath{ % draw border
15789     \pgfpathmoveto{\pgfpoint{0cm}{.5cm}}
15790     \pgfpathlineto{\pgfpoint{.433cm}{.25cm}}
15791     \pgfpathlineto{\pgfpoint{.433cm}{-.25cm}}
15792     \pgfpathlineto{\pgfpoint{0cm}{-.5cm}}
15793     \pgfpathlineto{\pgfpoint{-.433cm}{-.25cm}}
15794     \pgfpathlineto{\pgfpoint{-.433cm}{.25cm}}
15795     \pgfpathlineto{\pgfpoint{0cm}{.5cm}}
15796     \pgfpathlineto{\pgfpoint{.433cm}{-.25cm}}
15797     \pgfpathlineto{\pgfpoint{-.433cm}{-.25cm}}
15798     \pgfpathlineto{\pgfpoint{0cm}{.5cm}}
15799     % \pgfusepath{draw} %draw interior
15800   }}
```

Decahedron



```
15801 \pgfdeclareshape{d10}{
15802   \anchor{center}{\pgfpointorigin}    % within the node, (0,0) is the center
15803   \anchor{text}{
15804     % this is used to center the text in the node
15805     \pgfpoint{-.5\wd\pgfnodeparttextbox}{-.5\ht\pgfnodeparttextbox}}
15806   \backgroundpath{ % draw border
15807     \pgfpathmoveto{\pgfpoint{0cm}{.5cm}}
15808     \pgfpathlineto{\pgfpoint{.294cm}{-.154cm}}
15809     \pgfpathlineto{\pgfpoint{0cm}{-.3cm}}
15810     \pgfpathlineto{\pgfpoint{-.294cm}{-.154cm}}
15811     \pgfpathlineto{\pgfpoint{0cm}{.5cm}}
15812     \pgfpathlineto{\pgfpoint{.475cm}{.1cm}}
15813     \pgfpathlineto{\pgfpoint{.475cm}{-.1cm}}
15814     \pgfpathlineto{\pgfpoint{0cm}{-.5cm}}
15815     \pgfpathlineto{\pgfpoint{-.475cm}{-.1cm}}
15816     \pgfpathlineto{\pgfpoint{-.475cm}{.1cm}}
15817     \pgfpathlineto{\pgfpoint{0cm}{.5cm}}
15818     \pgfpathmoveto{\pgfpoint{.294cm}{-.154cm}}
15819     \pgfpathlineto{\pgfpoint{.475cm}{-.1cm}}
15820     \pgfpathmoveto{\pgfpoint{-.475cm}{-.1cm}}
15821     \pgfpathlineto{\pgfpoint{-.294cm}{-.154cm}}
15822     \pgfpathmoveto{\pgfpoint{0cm}{-.5cm}}
15823     \pgfpathlineto{\pgfpoint{0cm}{-.3cm}}
15824     % \pgfusepath{draw} %draw interior
15825   }}
```



Dodecahedron

```

15826 \pgfdeclareshape{d12}{
15827   \anchor{center}{\pgfpointorigin} % within the node, (0,0) is the center
15828   \anchor{text}{ % this is used to center the text in the node
15829     \pgfpoint{-.5\wd\pgfnodeparttextbox}{-.5\ht\pgfnodeparttextbox}}
15830   \backgroundpath{ % draw border
15831     \pgfpathmoveto{\pgfpoint{0cm}{.5cm}}
15832     \pgfpathlineto{\pgfpoint{0.294cm}{.405cm}}
15833     \pgfpathlineto{\pgfpoint{.475cm}{.173cm}}
15834     \pgfpathlineto{\pgfpoint{.475cm}{-.173cm}}
15835     \pgfpathlineto{\pgfpoint{.294cm}{-.405cm}}
15836     \pgfpathlineto{\pgfpoint{0cm}{-.5cm}}
15837     \pgfpathlineto{\pgfpoint{-.294cm}{-.405cm}}
15838     \pgfpathlineto{\pgfpoint{-.475cm}{-.173cm}}
15839     \pgfpathlineto{\pgfpoint{-.475cm}{.173cm}}
15840     \pgfpathlineto{\pgfpoint{-.294cm}{.405cm}}
15841     \pgfpathlineto{\pgfpoint{0cm}{.5cm}}
15842     \pgfpathlineto{\pgfpoint{0cm}{.349cm}}
15843     \pgfpathlineto{\pgfpoint{.332cm}{.108cm}}
15844     \pgfpathlineto{\pgfpoint{.205cm}{-.282cm}}
15845     \pgfpathlineto{\pgfpoint{-.205cm}{-.282cm}}
15846     \pgfpathlineto{\pgfpoint{-.332cm}{.108cm}}
15847     \pgfpathlineto{\pgfpoint{0cm}{.349cm}}
15848     \pgfpathmoveto{\pgfpoint{.475cm}{.173cm}}
15849     \pgfpathlineto{\pgfpoint{.332cm}{.108cm}}
15850     \pgfpathmoveto{\pgfpoint{.294cm}{-.405cm}}
15851     \pgfpathlineto{\pgfpoint{.205cm}{-.282cm}}
15852     \pgfpathmoveto{\pgfpoint{-.294cm}{-.405cm}}
15853     \pgfpathlineto{\pgfpoint{-.205cm}{-.282cm}}
15854     \pgfpathmoveto{\pgfpoint{-.475cm}{.173cm}}
15855     \pgfpathlineto{\pgfpoint{-.332cm}{.108cm}}
15856     % \pgfusepath{draw} %draw interior
15857   }}

```



Icosohedron

```

15858 \pgfdeclareshape{d20}{
15859   \anchor{center}{\pgfpointorigin} % within the node, (0,0) is the center
15860   \anchor{text}{ % this is used to center the text in the node
15861     \pgfpoint{-.5\wd\pgfnodeparttextbox}{-.5\ht\pgfnodeparttextbox}}
15862   \backgroundpath{ % draw border
15863     \pgfpathmoveto{\pgfpoint{0cm}{.5cm}}
15864     \pgfpathlineto{\pgfpoint{.454cm}{.262cm}}
15865     \pgfpathlineto{\pgfpoint{.454cm}{-.262cm}}
15866     \pgfpathlineto{\pgfpoint{0cm}{-.5cm}}
15867     \pgfpathlineto{\pgfpoint{-.454cm}{-.262cm}}
15868     \pgfpathlineto{\pgfpoint{-.454cm}{.262cm}}
15869     \pgfpathlineto{\pgfpoint{0cm}{.5cm}}
15870     \pgfpathlineto{\pgfpoint{0cm}{.292cm}}

```

```

15871 \pgfpathlineto{\pgfpoint{.253cm}{-.146cm}}
15872 \pgfpathlineto{\pgfpoint{-.253cm}{-.146cm}}
15873 \pgfpathlineto{\pgfpoint{0cm}{.292cm}}
15874 \pgfpathlineto{\pgfpoint{.454cm}{.262cm}}
15875 \pgfpathlineto{\pgfpoint{.253cm}{-.146cm}}
15876 \pgfpathlineto{\pgfpoint{0cm}{-.5cm}}
15877 \pgfpathlineto{\pgfpoint{-.253cm}{-.146cm}}
15878 \pgfpathlineto{\pgfpoint{-.454cm}{.262cm}}
15879 \pgfpathlineto{\pgfpoint{0cm}{.292cm}}
15880 \pgfpathmoveto{\pgfpoint{.454cm}{-.262cm}}
15881 \pgfpathlineto{\pgfpoint{.253cm}{-.146cm}}
15882 \pgfpathmoveto{\pgfpoint{-.454cm}{-.262cm}}
15883 \pgfpathlineto{\pgfpoint{-.253cm}{-.146cm}}
15884 % \pgfusepath{draw} %draw interior
15885 }

```

5.5.14 Some utilities

This style allows us to add a fading drop-shadow to chits.

```

15886 \usetikzlibrary{shadows.blur}
15887 \newif\ifwg@chit@drop\wg@chit@dropfalse
15888 \tikzset{
15889   chit has drop/.is if=wg@chit@drop,
15890   chit has drop/.default=true,
15891   chit has drop/.initial=false,
15892   /tikz/render blur shadow/.add code={%
15893     \chit@dbg{2}{Number of blur steps: \pgfbs@steps}%
15894     \ifnum\pgfbs@steps=0\else
15895     \chit@dbg{2}{Making shadow blur}%
15896     }{\fi}}
15897 \tikzset{%
15898   chit drop/.code={%
15899     %% \message{^^J Args '#1'}%
15900     \pgfkeysalso{%
15901       chit has drop=true,
15902       /tikz/blur shadow={shadow blur steps=5,
15903         shadow opacity=30,
15904         shadow xshift=.05cm,
15905         shadow yshift=-.05cm,
15906         shadow blur radius=.05cm,
15907         #1}}%
15908     \ifnum\pgfbs@steps=0%
15909       \gdef\wg@drop@margin{0pt}%
15910     \else%
15911       \ifwg@chit@drop%
15912         \pgfmathparse{
15913           \pgfbs@radius+
15914           vecLen(
15915             \pgfkeysvalueof{/tikz/shadow xshift},
15916             \pgfkeysvalueof{/tikz/shadow yshift})}
15917         \xdef\wg@drop@margin{\pgfmathresult pt}%
15918       \else%

```

```

15919     \gdef\wg@drop@margin{0pt}%
15920     \fi
15921     %% \message{^^J Drop margin is '\wg@drop@margin'
15922     %%   '\pgfbs@radius'
15923     %%   '\pgfkeysvalueof{/tikz/shadow xshift}',
15924     %%   '\pgfkeysvalueof{/tikz/shadow yshift}'}%
15925     \fi%
15926   },%
15927   chit drop/.default=,%
15928   no chit drop/.code={%
15929     \pgfkeysalso{
15930       /tikz/blur shadow={shadow blur steps=0}}
15931     \gdef\wg@drop@margin{0pt}%
15932   }
15933 }%

```

Game turn marker

```

15934 \tikzset{
15935   chit/text base/.style={
15936     shape=rectangle,
15937     inner sep=0pt,
15938     align=center,
15939     text width=1.1cm},
15940   chit/number/.style={
15941     chit/text base,
15942     font=\sffamily\bfseries\fontsize{12}{14}\selectfont},
15943   chit/game turn/.style={
15944     chit/text base,
15945     font=\sffamily\bfseries},
15946   chit/text/.style={
15947     chit/text base,
15948     font=\sffamily\bfseries},
15949   chit/small text/.style={
15950     chit/text base,
15951     font=\sffamily\bfseries\fontsize{9}{10}\selectfont},
15952   chit/number/.pic={\node[chit/number]{#1};},
15953   chit/game turn/.pic={\node[chit/game turn]{Game\\Turn};},
15954   chit/text/.pic={\node[chit/text]{#1};},
15955   chit/small text/.pic={\node[chit/small text]{#1};},
15956   game turn chit/.style={
15957     /chit/full={chit/game turn},
15958     color=black,
15959     fill=white},
15960   game turn chit flipped/.style={game turn chit},
15961   dummy chit/.style={fill=white},
15962 }

```

Marks of chits

```

15963 \providecommand\chitmark[2] [] {\tikz[scale=.25,#1]{\chit[#2]}}

```

Stacking mark

```

15964 \tikzset{
15965   wg stacking/.style={fill=white,
15966     /chit/symbol={[faction=friendly,command=land]}},
15967 }
15968 \DeclareRobustCommand\stackmark[1] []{%
15969   \tikz[baseline=(current bounding box.center),scale=.3,#1]{
15970     \stackchits(0,0)(.3,-.3){%
15971       \noexpand\chit[wg stacking],
15972       \noexpand\chit[wg stacking],
15973       \noexpand\chit[wg stacking]}}

```

ZOC mark

```

15974 \DeclareRobustCommand\zocmark[1] []{%
15975   \tikz[baseline=($(current bounding box.center)!.5!(current bounding box.south)$),scale=.1,#1]{%
15976     \begin{scope}[hex/first row and column are=0,
15977       hex/row direction is=normal,
15978       hex/column direction is=normal,
15979       hex/short columns=none]
15980       \hex[label=,fill=gray](c=1,r=1)%
15981       \hex[label=,fill=white](c=1,r=2)%
15982       \hex[label=,fill=white](c=1,r=0)%
15983       \hex[label=,fill=white](c=0,r=0)%
15984       \hex[label=,fill=white](c=0,r=1)%
15985       \hex[label=,fill=white](c=2,r=1)%
15986       \hex[label=,fill=white](c=2,r=0)
15987     \end{scope}}

```

Dummy implementations of zones hooks when exporting. Here, these do nothing, but in the `wgexport` class these are re-implemented.

```

15988 \tikzset{
15989   zone point/.code n args={3}{},
15990   zone oob point/.code n args={3}{}

```

5.6 The `wargame.natoapp6c` TikZ library

In this section we define the code for the TikZ library. The library defines a number of `pic` keys we can use to draw various parts of a marker. The markers conform to NATO App 6(c) specification. The implementation here is heavily inspired by the package `milsymb` [4] available at CTAN.

5.6.1 Debugging

```

\natoappdbglvl
\n@to@pp@dbg

```

Set the debug level, and make debug message.

```

15991 \usetikzlibrary{wargame.util}
15992 \usetikzlibrary{calc}
15993 \usetikzlibrary{arrows.meta}
15994 \usetikzlibrary{shapes.symbols}

```

```

15995 \usetikzlibrary{positioning,intersections}
15996 \newcount\natoappdbglvl\natoappdbglvl=\wargamedbglvl
15997 \def\n@to@pp@dbg#1#2{%
15998   \ifnum#1>\natoappdbglvl\relax\else\message{^^J#2}\fi}

```

5.6.2 Colours

```

\c@friendly
\c@hostile
\c@neutral
\c@unknown

```

Define standard colours for marker affiliations.

Name	
friendly	
hostile	
neutral	
unknown	

```

16000 \definecolor{friendly}{RGB}{128, 224, 255}
16001 \definecolor{hostile}{RGB}{255, 128, 128}
16002 \definecolor{neutral}{RGB}{170, 255, 170}
16003 \tikzset{%
16004   faction/.code={%
16005     \ifundefined{natoapp@fac}{%
16006       }\tikzset{fill=\natoapp@fac}}}}

```

5.6.3 Some dimensions

We define a number of dimensions which we will use in the following. They provide a rough parameterisation of the node shapes, but shouldn't really be changed. We have them here so that the code uses as few hard coded numbers as possible.

The dimensions are

- Installation 'hat' x coordinate
- Installation 'hat' height
- Activity width of boxes
- Height of space bar
- Radius of the symbol

```

16007 \newdimen\n@to@pp@inst@x\n@to@pp@inst@x=0.2cm
16008 \newdimen\n@to@pp@inst@h\n@to@pp@inst@h=0.15cm
16009 \newdimen\n@to@pp@act@w\n@to@pp@act@w=0.15cm
16010 \newdimen\n@to@pp@space@h\n@to@pp@space@h=0.1cm
16011 \newdimen\n@to@pp@r\n@to@pp@r=0.5cm

```

5.6.4 Some utilities

```
\n@to@pp@isclip
```

This detects if we're in a node that is being used for clipping

```
16012 %\def\n@to@pp@cliptoken{clip}
16013 %\def\n@to@pp@isclip{FF\fi%
16014 % % \message{^^Jclip is \meaning\pgf@up@clip}%
16015 % \ifx\pgf@up@clip\n@to@pp@cliptoken}
16016 \newif\ifn@to@pp@isclip\n@to@pp@isclipfalse
```

```
\n@to@pp@sav@fill@color
\n@to@pp@sav@stroke@color
```

Macros to hold saved colours.

```
16017 \let\n@to@pp@sav@stroke@color\relax
16018 \let\n@to@pp@sav@fill@color\relax
```

```
\n@to@pp@stroke@to@fill
\n@to@pp@restore@fill
```

Macro to get stroke and fill colours and set the fill colour to the stroke colour, and to restore to the old setting. This is used by the frame shapes below to make sure that filled elements of the frame uses the same colour as the for strokes.

```
16019 \newcommand\n@to@pp@stroke@to@fill{%
16020 %
16021 \expandafter\let\expandafter\n@to@pp@sav@stroke@color%
16022 \csname\string\color@pgfstrokecolor\endcsname%
16023 %
16024 \expandafter\let\expandafter\n@to@pp@sav@fill@color%
16025 \csname\string\color@pgffillcolor\endcsname%
16026 %
16027 \expandafter\pgf@setfillcolor\n@to@pp@sav@stroke@color%
16028 %
16029 % \message{^^J=== Set fill to stroke color
16030 % ^^J Old fill: \meaning\n@to@pp@sav@fill@color
16031 % ^^J Old stroke: \meaning\n@to@pp@sav@stroke@color}
16032 }

16033 \newcommand\n@to@pp@restore@fill{%
16034 % \message{^^J=== Restore fill color
16035 % ^^J Old fill: \meaning\n@to@pp@sav@fill@color
16036 % ^^J Old stroke: \meaning\n@to@pp@sav@stroke@color}
16037 %
16038 \ifx\n@to@pp@sav@fill@color\relax\else%
16039 \expandafter\pgf@setfillcolor\n@to@pp@sav@fill@color%
16040 \fi%
16041 \global\let\n@to@pp@sav@fill@color\relax
16042 \global\let\n@to@pp@sav@stroke@color\relax
16043 }
```

We also make an environment, just to simplify the use

```

16044 \newenvironment{n@to@pp@stroketo@fill}{%
16045   \pgfscope%
16046   \n@to@pp@stroke@to@fill%
16047 }{%
16048   \n@to@pp@restore@fill%
16049   \endpgfscope%
16050 }

```

5.6.5 Faction names as macros

```

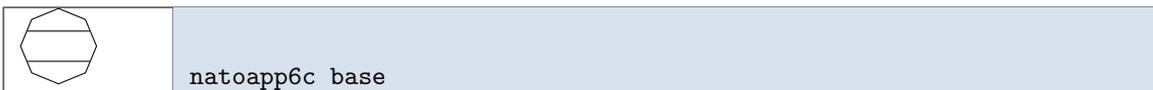
16051 \def\n@to@pp@friendly{friendly}
16052 \def\n@to@pp@hostile{hostile}
16053 \def\n@to@pp@neutral{neutral}
16054 \def\n@to@pp@unknown{unknown}

```

5.6.6 Node shapes

Here we define bases for all commands and affiliations. These are defined as node shapes. This means we will render the NATO App6(c) symbols as nodes with embedded nodes of the relevant shape.

First, the generic bounding box symbol for all markers.



Place-holder symbol. This shape will form the basis of many of the other frame shapes. We define the relevant sizes and anchors.

```

16055 \pgfdeclareshape{natoapp6c base}{%
16056   \saveddimen\radius{\pgf@x=\n@to@pp@r}
16057   \saveddimen\liney{\pgf@x=.2cm}
16058   \saveddimen\linex{\pgf@x=0.41cm}
16059   \savedanchor\center{\pgf@x=0cm\pgf@y=0cm}
16060   \savedanchor\upper{\pgf@x=0cm\pgf@y=0.35cm}
16061   \anchor{north east}{\pgf@x=\radius\pgf@y=\radius}
16062   \anchor{south west}{\pgf@x=-\radius\pgf@y=-\radius}
16063   \anchor{north west}{\pgf@x=-\radius\pgf@y=\radius}
16064   \anchor{south east}{\pgf@x=\radius\pgf@y=-\radius}
16065   \anchor{south}{\pgf@x=0cm\pgf@y=-\radius}
16066   \anchor{north}{\pgf@x=0cm\pgf@y=\radius}
16067   \anchor{west}{\pgf@x=-\radius\pgf@y=0cm}
16068   \anchor{east}{\pgf@x=\radius\pgf@y=0cm}
16069   \anchor{center}{\center}
16070   \anchor{upper}{\upper}
16071   \anchor{lower}{\upper\pgf@y=-\pgf@y}
16072   \anchor{left}{\upper\pgf@x=-\pgf@y\pgf@y=0cm}
16073   \anchor{right}{\upper\pgf@x=\pgf@y\pgf@y=0cm}
16074   \savedmacro\init{
16075     \def\octagon{%
16076       \pgfpathmoveto{\pgfqpointpolar{0}{\radius}}%
16077       \pgfpathlineto{\pgfqpointpolar{45}{\radius}}%

```

```

16078 \pgfpathlineto{\pgfqpointpolar{90}{\radius}}%
16079 \pgfpathlineto{\pgfqpointpolar{135}{\radius}}%
16080 \pgfpathlineto{\pgfqpointpolar{180}{\radius}}%
16081 \pgfpathlineto{\pgfqpointpolar{225}{\radius}}%
16082 \pgfpathlineto{\pgfqpointpolar{270}{\radius}}%
16083 \pgfpathlineto{\pgfqpointpolar{315}{\radius}}%
16084 \pgfpathclose}
16085 \def\topline{%
16086 \pgfpathmoveto{\pgfqpoint{\linex}{\liney}}%
16087 \pgfpathlineto{\pgfqpoint{-\linex}{\liney}}}%
16088 \def\bottomline{%
16089 \pgfpathmoveto{\pgfqpoint{\linex}{-\liney}}%
16090 \pgfpathlineto{\pgfqpoint{-\linex}{-\liney}}}%
16091 }
16092 \backgroundpath{%
16093 \init%
16094 \octagon}
16095 \behindforegroundpath{%
16096 \init%
16097 \octagon%
16098 \pgfusepath{stroke}%
16099 \topline%
16100 \pgfusepath{stroke}%
16101 \bottomline%
16102 \pgfusepath{stroke}%
16103 }
16104 }

```

5.6.7 ‘Friendly’ node shapes



Macro for friendly air shape

```

16105 \def\n@to@friendly@air{%
16106 \southeast \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
16107 \pgfpathmoveto{\pgfqpoint{-\wg@tmpa}{\wg@tmpb}}%
16108 \cntrl \wg@tmpb=\pgf@y%
16109 \pgfpatharc{180}{0}{\wg@tmpa and \wg@tmpb}}

```

The friendly air command.

```

16110 \pgfdeclareshape{natoapp6c friendly air}{%
16111 \inheritsavedanchors[from=natoapp6c base]
16112 \savedanchor\southeast{%
16113 \pgf@x=1.1\n@to@pp@r%
16114 \pgf@y=-\n@to@pp@r}
16115 \savedanchor\cntrl{\pgf@x=0cm\pgf@y=2.6\n@to@pp@r}
16116 \savedanchor\north{\pgf@x=0cm\pgf@y=1.6\n@to@pp@r}
16117 \anchor{south east}{\southeast}

```

```

16118 \anchor{south west}{\southeast\pgf@x=-\pgf@x}
16119 \anchor{north east}{\southeast\wg@tmpa=\pgf@x\north\pgf@x=\wg@tmpa}
16120 \anchor{north west}{\southeast\wg@tmpa=\pgf@x\north\pgf@x=-\wg@tmpa}
16121 \anchor{north}{\north}
16122 \anchor{east}{%
16123   \north\wg@tmpb\pgf@y%
16124   \southeast\wg@tmpc=\pgf@y\wg@tmpa=\pgf@x%
16125   \advance\wg@tmpb-\wg@tmpc
16126   \divide\wg@tmpb2%
16127   \advance\wg@tmpb\wg@tmpc%
16128   \pgf@x=\wg@tmpa%
16129   \pgf@y=\wg@tmpb}
16130 \anchor{west}{%
16131   \north\wg@tmpb\pgf@y%
16132   \southeast\wg@tmpc=\pgf@y\wg@tmpa=\pgf@x%
16133   \advance\wg@tmpb-\wg@tmpc
16134   \divide\wg@tmpb2%
16135   \advance\wg@tmpb\wg@tmpc%
16136   \pgf@x=-\wg@tmpa%
16137   \pgf@y=\wg@tmpb}
16138 \anchor{south}{\southeast\pgf@x=0cm}
16139 \inheritanchor[from=natoapp6c base]{upper}
16140 \inheritanchor[from=natoapp6c base]{lower}
16141 \inheritanchor[from=natoapp6c base]{left}
16142 \inheritanchor[from=natoapp6c base]{right}
16143 \inheritanchor[from=natoapp6c base]{center}
16144 \backgroundpath{%
16145   \n@to@friendly@@ir%
16146 }
16147 \behindforegroundpath{%
16148   \n@to@friendly@@ir%
16149   \pgfusepath{stroke}%
16150 }
16151 }

```



Macro for friendly land command

```

16152 \def\n@to@friendly@l@nd{%
16153   \northeast \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
16154   \pgfpathmoveto{\pgfpoint{ \wg@tmpa}{ \wg@tmpb}}%
16155   \pgfpathlineto{\pgfpoint{-\wg@tmpa}{ \wg@tmpb}}%
16156   \pgfpathlineto{\pgfpoint{-\wg@tmpa}{-\wg@tmpb}}%
16157   \pgfpathlineto{\pgfpoint{ \wg@tmpa}{-\wg@tmpb}}%
16158   \pgfclosepath}

```

The friendly land command. The most used command frame.

```

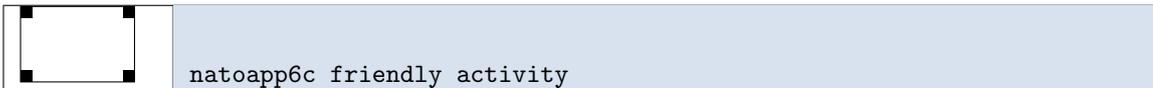
16159 \pgfdeclareshape{natoapp6c friendly land}{%
16160   \inheritshapedanchors[from=natoapp6c base]

```

```

16161 \savedanchor\northeast{%
16162   \pgf@x=1.5\n@to@pp@r%
16163   \pgf@y=\n@to@pp@r}
16164 \anchor{north east}{\northeast}
16165 \anchor{north west}{\northeast\pgf@x=-\pgf@x}
16166 \anchor{south east}{\northeast\pgf@y=-\pgf@y}
16167 \anchor{south west}{\northeast\pgf@x=-\pgf@x\pgf@y=-\pgf@y}
16168 \anchor{north}{\northeast\pgf@x=0cm}
16169 \anchor{south}{\northeast\pgf@x=0cm\pgf@y=-\pgf@y}
16170 \anchor{east}{\northeast\pgf@y=0cm}
16171 \anchor{west}{\northeast\pgf@x=-\pgf@x\pgf@y=0cm}
16172 \inheritanchor[from=natoapp6c base]{upper}
16173 \inheritanchor[from=natoapp6c base]{lower}
16174 \inheritanchor[from=natoapp6c base]{left}
16175 \inheritanchor[from=natoapp6c base]{right}
16176 \inheritanchor[from=natoapp6c base]{center}
16177 \backgroundpath{%
16178   \n@to@friendly@l@nd%
16179 }
16180 \behindforegroundpath{%
16181   \n@to@friendly@l@nd%
16182   \pgfusepath{stroke}%
16183 }
16184 }

```



natoapp6c friendly activity

The friendly activity command. Similar to land command, but with boxes in the corners.

```

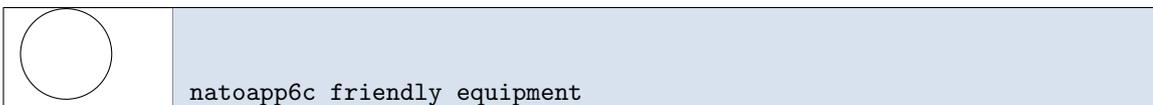
16185 \pgfdeclareshape{natoapp6c friendly activity}{%
16186   \inheritssavedanchors[from=natoapp6c friendly land]
16187   \inheritanchor[from=natoapp6c friendly land]{center}
16188   \inheritanchor[from=natoapp6c friendly land]{inner north east}
16189   \inheritanchor[from=natoapp6c friendly land]{inner north west}
16190   \inheritanchor[from=natoapp6c friendly land]{inner south west}
16191   \inheritanchor[from=natoapp6c friendly land]{inner south east}
16192   \inheritanchor[from=natoapp6c friendly land]{north east}
16193   \inheritanchor[from=natoapp6c friendly land]{north west}
16194   \inheritanchor[from=natoapp6c friendly land]{south east}
16195   \inheritanchor[from=natoapp6c friendly land]{south west}
16196   \inheritanchor[from=natoapp6c friendly land]{north}
16197   \inheritanchor[from=natoapp6c friendly land]{west}
16198   \inheritanchor[from=natoapp6c friendly land]{east}
16199   \inheritanchor[from=natoapp6c friendly land]{south}
16200   \inheritanchor[from=natoapp6c friendly land]{upper}
16201   \inheritanchor[from=natoapp6c friendly land]{lower}
16202   \inheritanchor[from=natoapp6c friendly land]{left}
16203   \inheritanchor[from=natoapp6c friendly land]{right}
16204   \inheritanchor[from=natoapp6c friendly land]{center}
16205   \inheritbackgroundpath[from=natoapp6c friendly land]
16206   \behindforegroundpath{

```

```

16207 \begin{nato@pp@stroketofill}
16208 \nato@friendly@l@nd%
16209 \pgfusepath{stroke}
16210 %
16211 \northeast \wg@tmpa=\pgf@x\wg@tmpb\pgf@y%
16212 \wg@tmpc=\wg@tmpa\advance\wg@tmpc-\nato@pp@act@w
16213 \wg@tmpd=\wg@tmpb\advance\wg@tmpd-\nato@pp@act@w
16214 %
16215 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
16216 \pgfpathlineto{\pgfqpoint{\wg@tmpc}{\wg@tmpb}}%
16217 \pgfpathlineto{\pgfqpoint{\wg@tmpc}{\wg@tmpd}}%
16218 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpd}}%
16219 \pgfclosepath
16220 %
16221 \pgfusepath{fill}%
16222 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{-\wg@tmpd}}%
16223 \pgfpathlineto{\pgfqpoint{\wg@tmpc}{-\wg@tmpd}}%
16224 \pgfpathlineto{\pgfqpoint{\wg@tmpc}{-\wg@tmpb}}%
16225 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{-\wg@tmpb}}%
16226 \pgfclosepath
16227 \pgfusepath{fill}%
16228 %
16229 \pgfpathmoveto{\pgfqpoint{-\wg@tmpc}{\wg@tmpb}}%
16230 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpb}}%
16231 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpd}}%
16232 \pgfpathlineto{\pgfqpoint{-\wg@tmpc}{\wg@tmpd}}%
16233 \pgfclosepath
16234 \pgfusepath{fill}%
16235 %
16236 \pgfpathmoveto{\pgfqpoint{-\wg@tmpc}{-\wg@tmpd}}%
16237 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{-\wg@tmpd}}%
16238 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{-\wg@tmpb}}%
16239 \pgfpathlineto{\pgfqpoint{-\wg@tmpc}{-\wg@tmpb}}%
16240 \pgfclosepath
16241 \pgfusepath{fill}%
16242 \end{nato@pp@stroketofill}
16243 }
16244 }

```



The friendly equipment command. A circle.

```

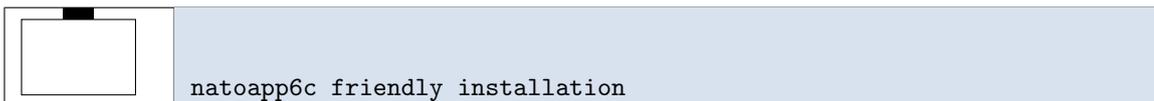
16245 \pgfdeclareshape{natoapp6c friendly equipment}{%
16246 \inheritsavedanchors[from=natoapp6c base]
16247 \savedanchor\northeast{%
16248 \pgf@x=1.2\nato@pp@r%
16249 \pgf@y=1.2\nato@pp@r}
16250 \anchor{north east}{\northeast}
16251 \anchor{north west}{\northeast\pgf@x=-\pgf@x}

```

```

16252 \anchor{south east}{\northeast\pgf@y=-\pgf@y}
16253 \anchor{south west}{\northeast\pgf@x=-\pgf@x\pgf@y=-\pgf@y}
16254 \anchor{north}{\northeast\pgf@x=0cm}
16255 \anchor{south}{\northeast\pgf@x=0cm\pgf@y=-\pgf@y}
16256 \anchor{east}{\northeast\pgf@y=0cm}
16257 \anchor{west}{\northeast\pgf@x=-\pgf@x\pgf@y=0cm}
16258 \inheritanchor[from=natoapp6c base]{upper}
16259 \inheritanchor[from=natoapp6c base]{lower}
16260 \inheritanchor[from=natoapp6c base]{left}
16261 \inheritanchor[from=natoapp6c base]{right}
16262 \inheritanchor[from=natoapp6c base]{center}
16263 \backgroundpath{%
16264     \northeast\wg@tmpa\pgf@x%
16265     \pgfpathcircle{\pgfqpoint{0cm}{0cm}}{\wg@tmpa}
16266 }
16267 \behindforegroundpath{%
16268     \northeast\wg@tmpa\pgf@x%
16269     \pgfpathcircle{\pgfqpoint{0cm}{0cm}}{\wg@tmpa}
16270     \pgfusepath{stroke}%
16271 }
16272 }

```



The friendly installation command. Similar to the land command, but with a ‘hat’ on top.

```

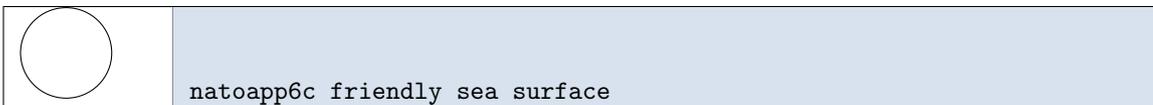
16273 \pgfdeclareshape{natoapp6c friendly installation}{%
16274 \inheritsavedanchors[from=natoapp6c friendly land]
16275 \inheritanchor[from=natoapp6c friendly land]{center}
16276 \inheritanchor[from=natoapp6c friendly land]{inner north east}
16277 \inheritanchor[from=natoapp6c friendly land]{inner north west}
16278 \inheritanchor[from=natoapp6c friendly land]{inner south west}
16279 \inheritanchor[from=natoapp6c friendly land]{inner south east}
16280 \inheritanchor[from=natoapp6c friendly land]{north east}
16281 \inheritanchor[from=natoapp6c friendly land]{north west}
16282 \inheritanchor[from=natoapp6c friendly land]{south east}
16283 \inheritanchor[from=natoapp6c friendly land]{south west}
16284 \inheritanchor[from=natoapp6c friendly land]{north}
16285 \inheritanchor[from=natoapp6c friendly land]{west}
16286 \inheritanchor[from=natoapp6c friendly land]{east}
16287 \inheritanchor[from=natoapp6c friendly land]{south}
16288 \inheritanchor[from=natoapp6c friendly land]{upper}
16289 \inheritanchor[from=natoapp6c friendly land]{lower}
16290 \inheritanchor[from=natoapp6c friendly land]{left}
16291 \inheritanchor[from=natoapp6c friendly land]{right}
16292 \inheritanchor[from=natoapp6c friendly land]{center}
16293 \inheritbackgroundpath[from=natoapp6c friendly land]
16294 \behindforegroundpath{
16295     \begin{n@to@pp@stroketofill}
16296         \n@to@friendly@l@nd%
16297         \pgfusepath{stroke}

```

```

16298 %
16299 \northeast \wg@tmpa=\pgf@y%
16300 \wg@tmpb=\wg@tmpa\advance\wg@tmpb\n@to@pp@inst@h%
16301 %
16302 \pgfpathmoveto{\pgfqpoint{ \n@to@pp@inst@x}{\wg@tmpb}}%
16303 \pgfpathlineto{\pgfqpoint{-\n@to@pp@inst@x}{\wg@tmpb}}%
16304 \pgfpathlineto{\pgfqpoint{-\n@to@pp@inst@x}{\wg@tmpa}}%
16305 \pgfpathlineto{\pgfqpoint{ \n@to@pp@inst@x}{\wg@tmpa}}%
16306 \pgfclosepath
16307 \pgfusepath{fill}%
16308 \end{n@to@pp@stroketo@fill}
16309 }
16310 }

```

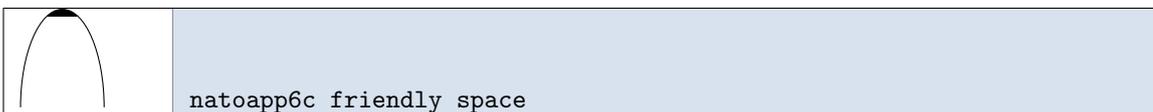


The friendly sea surface command. Same as equipment command.

```

16311 \pgfdeclareshape{natoapp6c friendly sea surface}{%
16312 \inheritsavedanchors[from=natoapp6c friendly equipment]
16313 \inheritanchor[from=natoapp6c friendly equipment]{inner north east}
16314 \inheritanchor[from=natoapp6c friendly equipment]{inner north west}
16315 \inheritanchor[from=natoapp6c friendly equipment]{inner south west}
16316 \inheritanchor[from=natoapp6c friendly equipment]{inner south east}
16317 \inheritanchor[from=natoapp6c friendly equipment]{north east}
16318 \inheritanchor[from=natoapp6c friendly equipment]{north west}
16319 \inheritanchor[from=natoapp6c friendly equipment]{south east}
16320 \inheritanchor[from=natoapp6c friendly equipment]{south west}
16321 \inheritanchor[from=natoapp6c friendly equipment]{north}
16322 \inheritanchor[from=natoapp6c friendly equipment]{west}
16323 \inheritanchor[from=natoapp6c friendly equipment]{east}
16324 \inheritanchor[from=natoapp6c friendly equipment]{south}
16325 \inheritanchor[from=natoapp6c friendly equipment]{upper}
16326 \inheritanchor[from=natoapp6c friendly equipment]{lower}
16327 \inheritanchor[from=natoapp6c friendly equipment]{left}
16328 \inheritanchor[from=natoapp6c friendly equipment]{right}
16329 \inheritanchor[from=natoapp6c friendly equipment]{center}
16330 \inheritbackgroundpath[from=natoapp6c friendly equipment]
16331 \inheritbehindforegroundpath[from=natoapp6c friendly equipment]
16332 }

```



The friendly space command. Similar to air command, but with a bar on top.

```

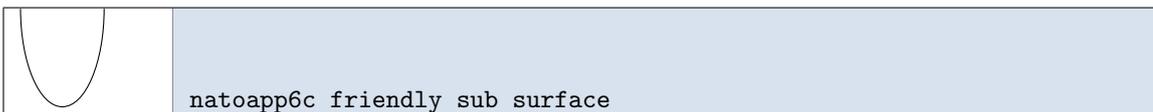
16333 \pgfdeclareshape{natoapp6c friendly space}{%
16334 \inheritsavedanchors[from=natoapp6c friendly air]

```

```

16335 \inheritanchor[from=natoapp6c friendly air]{north east}
16336 \inheritanchor[from=natoapp6c friendly air]{north west}
16337 \inheritanchor[from=natoapp6c friendly air]{south east}
16338 \inheritanchor[from=natoapp6c friendly air]{south west}
16339 \inheritanchor[from=natoapp6c friendly air]{north}
16340 \inheritanchor[from=natoapp6c friendly air]{west}
16341 \inheritanchor[from=natoapp6c friendly air]{east}
16342 \inheritanchor[from=natoapp6c friendly air]{south}
16343 \inheritanchor[from=natoapp6c friendly air]{upper}
16344 \inheritanchor[from=natoapp6c friendly air]{lower}
16345 \inheritanchor[from=natoapp6c friendly air]{left}
16346 \inheritanchor[from=natoapp6c friendly air]{right}
16347 \inheritanchor[from=natoapp6c friendly air]{center}
16348 \inheritbackgroundpath[from=natoapp6c friendly air]
16349 \behindforegroundpath{%
16350   \begin{n@to@pp@stroketo@fill}
16351     \n@to@friendly@air%,
16352     \pgfusepath{stroke,clip}%
16353     %
16354     \cntrl\wg@tmpa=\pgf@y%
16355     \north\wg@tmpb=\pgf@y
16356     \advance\wg@tmpb-\n@to@pp@space@h
16357     %
16358     \pgfpathmoveto{\pgfpoint{\n@to@pp@r}{\wg@tmpa}}%
16359     \pgfpathlineto{\pgfpoint{-\n@to@pp@r}{\wg@tmpa}}%
16360     \pgfpathlineto{\pgfpoint{-\n@to@pp@r}{\wg@tmpb}}%
16361     \pgfpathlineto{\pgfpoint{\n@to@pp@r}{\wg@tmpb}}%
16362     \pgfclosepath%
16363     \pgfusepath{fill}%
16364   \end{n@to@pp@stroketo@fill}
16365 }
16366 }

```



Macro for friendly sub surface command

```

16367 \def\n@to@friendly@sub{%
16368   \northeast \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
16369   \pgfpathmoveto{\pgfpoint{-\wg@tmpa}{\wg@tmpb}}%
16370   \cntrl \wg@tmpb=\pgf@y%
16371   \pgfpatharc{180}{0}{\wg@tmpa and \wg@tmpb}}

```

The friendly sub surface command.

```

16372 \pgfdeclareshape{natoapp6c friendly sub surface}{%
16373   \inheritsavedanchors[from=natoapp6c base]
16374   \savedanchor\northeast{%
16375     \pgf@x=1.1\n@to@pp@r%
16376     \pgf@y=\n@to@pp@r}

```

```

16377 \savedanchor\cntrl{\pgf@x=0cm\pgf@y=-2.6\nto@pp@r}
16378 \savedanchor\south{\pgf@x=0cm\pgf@y=-1.6\nto@pp@r}
16379 \anchor{north east}{\northeast}
16380 \anchor{north west}{\northeast\pgf@x=-\pgf@x}
16381 \anchor{south east}{\northeast\wg@tmpa=\pgf@x\south\pgf@x=\wg@tmpa}
16382 \anchor{south west}{\northeast\wg@tmpa=\pgf@x\south\pgf@x=-\wg@tmpa}
16383 \anchor{south}{\south}
16384 \anchor{east}{
16385   \northeast\wg@tmpb=\pgf@y\wg@tmpa=\pgf@x%
16386   \south\wg@tmpc\pgf@y%
16387   \advance\wg@tmpb-\wg@tmpc
16388   \divide\wg@tmpb2%
16389   \advance\wg@tmpb\wg@tmpc%
16390   \pgf@x=\wg@tmpa%
16391   \pgf@y=\wg@tmpb}
16392 \anchor{west}{
16393   \northeast\wg@tmpb=\pgf@y\wg@tmpa=\pgf@x%
16394   \south\wg@tmpc\pgf@y%
16395   \advance\wg@tmpb-\wg@tmpc
16396   \divide\wg@tmpb2%
16397   \advance\wg@tmpb\wg@tmpc%
16398   \pgf@x=-\wg@tmpa%
16399   \pgf@y=\wg@tmpb}
16400 \anchor{north}{\northeast\pgf@x=0cm}
16401 \inheritanchor[from=natoapp6c base]{upper}
16402 \inheritanchor[from=natoapp6c base]{lower}
16403 \inheritanchor[from=natoapp6c base]{left}
16404 \inheritanchor[from=natoapp6c base]{right}
16405 \inheritanchor[from=natoapp6c base]{center}
16406 \backgroundpath{%
16407   \nto@friendly@sub%
16408 }
16409 \behindforegroundpath{%
16410   \nto@friendly@sub%
16411   \pgfusepath{stroke}%
16412 }
16413 }

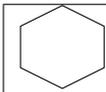
16414 \pgfdeclareshape{natoapp6c friendly none}{%
16415   \inheritsavedanchors[from=natoapp6c base]
16416   \savedanchor\northeast{%
16417     \pgf@x=1.5\nto@pp@r%
16418     \pgf@y=\nto@pp@r}
16419   \anchor{north east}{\northeast}
16420   \anchor{north west}{\northeast\pgf@x=-\pgf@x}
16421   \anchor{south east}{\northeast\pgf@y=-\pgf@y}
16422   \anchor{south west}{\northeast\pgf@x=-\pgf@x\pgf@y=-\pgf@y}
16423   \anchor{north}{\northeast\pgf@x=0cm}
16424   \anchor{south}{\northeast\pgf@x=0cm\pgf@y=-\pgf@y}
16425   \anchor{east}{\northeast\pgf@y=0cm}
16426   \anchor{west}{\northeast\pgf@x=-\pgf@x\pgf@y=0cm}
16427   \inheritanchor[from=natoapp6c base]{upper}
16428   \inheritanchor[from=natoapp6c base]{lower}
16429   \inheritanchor[from=natoapp6c base]{left}

```

```

16430 \inheritanchor[from=natoapp6c base]{right}
16431 \inheritanchor[from=natoapp6c base]{center}
16432 \backgroundpath{}
16433 \behindforegroundpath{}
16434 }

```



natoapp6c friendly dismantled

Macro for friendly dismantled command

```

16435 \def\n@to@friendly@l@nd{%
16436 \northeast \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
16437 \pgfpathmoveto{\pgfpoint{ \wg@tmpa}{ \wg@tmpb}}%
16438 \pgfpathlineto{\pgfpoint{-\wg@tmpa}{ \wg@tmpb}}%
16439 \pgfpathlineto{\pgfpoint{-\wg@tmpa}{-\wg@tmpb}}%
16440 \pgfpathlineto{\pgfpoint{ \wg@tmpa}{-\wg@tmpb}}%
16441 \pgfclosepath}

```

The friendly dismantled command. The most used command frame.

```

16442 \def\n@to@pp@friendl@dismounted{%
16443 \northeast \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
16444 \pgfpathmoveto{\pgfpoint{-\wg@tmpa}{-.5\wg@tmpb}}%
16445 \pgfpathlineto{\pgfpoint{-\wg@tmpa}{.5\wg@tmpb}}%
16446 \pgfpathlineto{\pgfpoint{0cm}{ \wg@tmpb}}%
16447 \pgfpathlineto{\pgfpoint{ \wg@tmpa}{.5\wg@tmpb}}%
16448 \pgfpathlineto{\pgfpoint{ \wg@tmpa}{-.5\wg@tmpb}}%
16449 \pgfpathlineto{\pgfpoint{0cm}{ -\wg@tmpb}}%
16450 \pgfclosepath%
16451 }%
16452 \pgfdeclareshape{natoapp6c friendly dismantled}{%
16453 \inheritssavedanchors[from=natoapp6c base]
16454 \savedanchor\northeast{%
16455 \pgf@x=1.1\n@to@pp@r%
16456 \pgf@y=1.1\n@to@pp@r}
16457 \anchor{north east}{\northeast}
16458 \anchor{north west}{\northeast\pgf@x=-\pgf@x}
16459 \anchor{south east}{\northeast\pgf@y=-\pgf@y}
16460 \anchor{south west}{\northeast\pgf@x=-\pgf@x\pgf@y=-\pgf@y}
16461 \anchor{north}{\northeast\pgf@x=0cm}
16462 \anchor{south}{\northeast\pgf@x=0cm\pgf@y=-\pgf@y}
16463 \anchor{east}{\northeast\pgf@y=0cm}
16464 \anchor{west}{\northeast\pgf@x=-\pgf@x\pgf@y=0cm}
16465 \inheritanchor[from=natoapp6c base]{upper}
16466 \inheritanchor[from=natoapp6c base]{lower}
16467 \inheritanchor[from=natoapp6c base]{left}
16468 \inheritanchor[from=natoapp6c base]{right}
16469 \inheritanchor[from=natoapp6c base]{center}
16470 \backgroundpath{%
16471 \n@to@pp@friendl@dismounted%
16472 }

```

```

16473 \behindforegroundpath{%
16474   \n@to@pp@friendl@dismounted%
16475   \pgfusepath{stroke}%
16476 }
16477 }

```

5.6.8 ‘Hostile’ node shapes



The hostile air command

Macro for hostile air shape

```

16478 \def\n@to@hostile@air{%
16479   \southeast \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
16480   \cntrl \wg@tmpc=\pgf@y%
16481   \north \wg@tmpd=\pgf@y%
16482   \pgfpathmoveto{\pgfqpoint{-\wg@tmpa}{\wg@tmpb}}%
16483   \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpc}}%
16484   \pgfpathlineto{\pgfqpoint{ 0cm}{\wg@tmpd}}%
16485   \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpc}}%
16486   \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
16487 }

```

The hostile air command.

```

16488 \pgfdeclareshape{natoapp6c hostile air}{%
16489   \inheritsavedanchors[from=natoapp6c base]
16490   \savedanchor\southeast{%
16491     \pgf@x=\n@to@pp@r%
16492     \pgf@y=-\n@to@pp@r}
16493   \savedanchor\cntrl{%
16494     \pgf@x=\n@to@pp@r%
16495     \pgf@y=0.414\n@to@pp@r% (sqrt(2)-1)
16496   }
16497   \savedanchor\north{\pgf@x=0cm\pgf@y=1.414\n@to@pp@r}
16498   \anchor{south east}{\southeast}
16499   \anchor{south west}{\southeast\pgf@x=-\pgf@x}
16500   \anchor{north east}{\southeast\wg@tmpa=\pgf@x\north\pgf@x=\wg@tmpa}
16501   \anchor{north west}{\southeast\wg@tmpa=\pgf@x\north\pgf@x=-\wg@tmpa}
16502   \anchor{north}{\north}
16503   \anchor{east}{%
16504     \north\wg@tmpb\pgf@y%
16505     \southeast\wg@tmpc=\pgf@y\wg@tmpa=\pgf@x%
16506     \advance\wg@tmpb-\wg@tmpc
16507     \divide\wg@tmpb2%
16508     \advance\wg@tmpb\wg@tmpc%
16509     \pgf@x=\wg@tmpa%
16510     \pgf@y=\wg@tmpb}
16511   \anchor{west}{%

```

```

16512 \north\wg@tmpb\pgf@y%
16513 \southeast\wg@tmpc=\pgf@y\wg@tmpa=\pgf@x%
16514 \advance\wg@tmpb-\wg@tmpc
16515 \divide\wg@tmpb2%
16516 \advance\wg@tmpb\wg@tmpc%
16517 \pgf@x=-\wg@tmpa%
16518 \pgf@y=\wg@tmpb}
16519 \anchor{south}{\southeast\pgf@x=0cm}
16520 \inheritanchor[from=natoapp6c base]{upper}
16521 \inheritanchor[from=natoapp6c base]{lower}
16522 \inheritanchor[from=natoapp6c base]{left}
16523 \inheritanchor[from=natoapp6c base]{right}
16524 \inheritanchor[from=natoapp6c base]{center}
16525 \backgroundpath{%
16526 \n@to@hostile@@ir%
16527 }
16528 \behindforegroundpath{%
16529 \n@to@hostile@@ir%
16530 \pgfusepath{stroke}%
16531 }
16532 }

```



Macro for hostile land command

```

16533 \def\n@to@hostile@l@nd{%
16534 \northeast \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
16535 \pgfpathmoveto{\pgfqpoint{ \wg@tmpa}{ 0cm}}%
16536 \pgfpathlineto{\pgfqpoint{ 0cm}{ \wg@tmpb}}%
16537 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{ 0cm}}%
16538 \pgfpathlineto{\pgfqpoint{ 0cm}{-\wg@tmpb}}%
16539 \pgfclosepath}

```

The hostile land command.

```

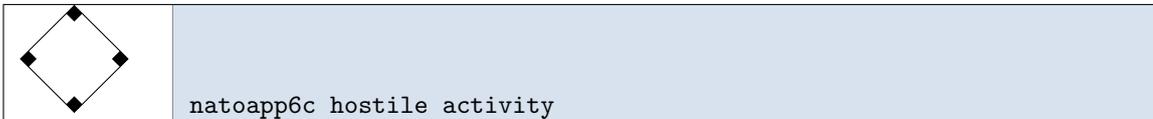
16540 \pgfdeclareshape{natoapp6c hostile land}{%
16541 \inheritsavedanchors[from=natoapp6c base]
16542 \savedanchor\northeast{%
16543 \pgf@x=1.414\n@to@pp@r%
16544 \pgf@y=1.414\n@to@pp@r}
16545 \anchor{north east}{\northeast}
16546 \anchor{north west}{\northeast\pgf@x=-\pgf@x}
16547 \anchor{south east}{\northeast\pgf@y=-\pgf@y}
16548 \anchor{south west}{\northeast\pgf@x=-\pgf@x\pgf@y=-\pgf@y}
16549 \anchor{north}{\northeast\pgf@x=0cm}
16550 \anchor{south}{\northeast\pgf@x=0cm\pgf@y=-\pgf@y}
16551 \anchor{east}{\northeast\pgf@y=0cm}
16552 \anchor{west}{\northeast\pgf@x=-\pgf@x\pgf@y=0cm}
16553 \inheritanchor[from=natoapp6c base]{upper}

```

```

16554 \inheritanchor[from=natoapp6c base]{lower}
16555 \inheritanchor[from=natoapp6c base]{left}
16556 \inheritanchor[from=natoapp6c base]{right}
16557 \inheritanchor[from=natoapp6c base]{center}
16558 \backgroundpath{%
16559   \n@to@hostile@l@nd%
16560 }
16561 \behindforegroundpath{%
16562   \n@to@hostile@l@nd%
16563   \pgfusepath{stroke}%
16564 }
16565 }

```



The hostile activity command. Similar to land command, but with boxes in the corners.

```

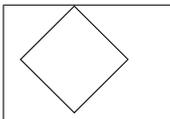
16566 \pgfdeclareshape{natoapp6c hostile activity}{%
16567   \inheritssavedanchors[from=natoapp6c hostile land]
16568   \inheritanchor[from=natoapp6c hostile land]{center}
16569   \inheritanchor[from=natoapp6c hostile land]{inner north east}
16570   \inheritanchor[from=natoapp6c hostile land]{inner north west}
16571   \inheritanchor[from=natoapp6c hostile land]{inner south west}
16572   \inheritanchor[from=natoapp6c hostile land]{inner south east}
16573   \inheritanchor[from=natoapp6c hostile land]{north east}
16574   \inheritanchor[from=natoapp6c hostile land]{north west}
16575   \inheritanchor[from=natoapp6c hostile land]{south east}
16576   \inheritanchor[from=natoapp6c hostile land]{south west}
16577   \inheritanchor[from=natoapp6c hostile land]{north}
16578   \inheritanchor[from=natoapp6c hostile land]{west}
16579   \inheritanchor[from=natoapp6c hostile land]{east}
16580   \inheritanchor[from=natoapp6c hostile land]{south}
16581   \inheritanchor[from=natoapp6c hostile land]{upper}
16582   \inheritanchor[from=natoapp6c hostile land]{lower}
16583   \inheritanchor[from=natoapp6c hostile land]{left}
16584   \inheritanchor[from=natoapp6c hostile land]{right}
16585   \inheritanchor[from=natoapp6c hostile land]{center}
16586   \inheritbackgroundpath[from=natoapp6c hostile land]
16587   \behindforegroundpath{
16588     \begin{n@to@pp@stroketofill}
16589       \n@to@hostile@l@nd%
16590       \pgfusepath{stroke}
16591       %
16592       \northeast \wg@tmpb=\pgf@y%
16593       \wg@tmpa=0.707\n@to@pp@act@w
16594       \wg@tmpc=\wg@tmpb\advance\wg@tmpc-1.414\n@to@pp@act@w
16595       \wg@tmpd=\wg@tmpb\advance\wg@tmpd-\wg@tmpa
16596       %
16597       \pgfpathmoveto{\pgfqpoint{ \wg@tmpa}{\wg@tmpd}}%
16598       \pgfpathlineto{\pgfqpoint{ 0cm}{\wg@tmpb}}%

```

```

16599 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpd}}%
16600 \pgfpathlineto{\pgfqpoint{ 0cm}{\wg@tmpc}}%
16601 \pgfclosepath
16602 \pgfusepath{fill}%
16603 %
16604 \pgfpathmoveto{\pgfqpoint{-\wg@tmpc}{0cm}}%
16605 \pgfpathlineto{\pgfqpoint{-\wg@tmpd}{\wg@tmpa}}%
16606 \pgfpathlineto{\pgfqpoint{-\wg@tmpb}{0cm}}%
16607 \pgfpathlineto{\pgfqpoint{-\wg@tmpd}{-\wg@tmpa}}%
16608 \pgfclosepath
16609 \pgfusepath{fill}%
16610 %
16611 \pgfpathmoveto{\pgfqpoint{ \wg@tmpa}{-\wg@tmpd}}%
16612 \pgfpathlineto{\pgfqpoint{ 0cm}{-\wg@tmpc}}%
16613 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{-\wg@tmpd}}%
16614 \pgfpathlineto{\pgfqpoint{ 0cm}{-\wg@tmpb}}%
16615 \pgfclosepath
16616 \pgfusepath{fill}%
16617 %
16618 \pgfpathmoveto{\pgfqpoint{\wg@tmpb}{0cm}}%
16619 \pgfpathlineto{\pgfqpoint{\wg@tmpd}{\wg@tmpa}}%
16620 \pgfpathlineto{\pgfqpoint{\wg@tmpc}{0cm}}%
16621 \pgfpathlineto{\pgfqpoint{\wg@tmpd}{-\wg@tmpa}}%
16622 \pgfclosepath
16623 \pgfusepath{fill}%
16624 \end{natoapp6cstroketofill}
16625 }
16626 }

```



natoapp6c hostile equipment

The hostile equipment command. Same as land command.

```

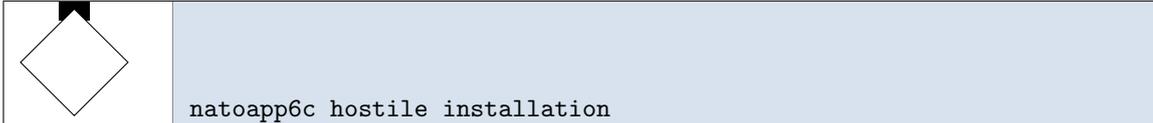
16627 \pgfdeclareshape{natoapp6c hostile equipment}{%
16628 \inheritssavedanchors[from=natoapp6c hostile land]
16629 \inheritanchor[from=natoapp6c hostile land]{inner north east}
16630 \inheritanchor[from=natoapp6c hostile land]{inner north west}
16631 \inheritanchor[from=natoapp6c hostile land]{inner south west}
16632 \inheritanchor[from=natoapp6c hostile land]{inner south east}
16633 \inheritanchor[from=natoapp6c hostile land]{north east}
16634 \inheritanchor[from=natoapp6c hostile land]{north west}
16635 \inheritanchor[from=natoapp6c hostile land]{south east}
16636 \inheritanchor[from=natoapp6c hostile land]{south west}
16637 \inheritanchor[from=natoapp6c hostile land]{north}
16638 \inheritanchor[from=natoapp6c hostile land]{west}
16639 \inheritanchor[from=natoapp6c hostile land]{east}
16640 \inheritanchor[from=natoapp6c hostile land]{south}
16641 \inheritanchor[from=natoapp6c hostile land]{upper}
16642 \inheritanchor[from=natoapp6c hostile land]{lower}
16643 \inheritanchor[from=natoapp6c hostile land]{left}

```

```

16644 \inheritanchor[from=natoapp6c hostile land]{right}
16645 \inheritanchor[from=natoapp6c hostile land]{center}
16646 \inheritbackgroundpath[from=natoapp6c hostile land]
16647 \inheritbehindforegroundpath[from=natoapp6c hostile land]
16648 }

```



The hostile installation command. Similar to land command, but with a ‘hat’ on top.

```

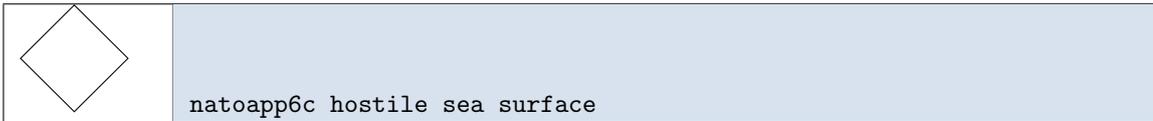
16649 \pgfdeclareshape{natoapp6c hostile installation}{%
16650 \inheritsavedanchors[from=natoapp6c hostile land]
16651 \inheritanchor[from=natoapp6c hostile land]{center}
16652 \inheritanchor[from=natoapp6c hostile land]{inner north east}
16653 \inheritanchor[from=natoapp6c hostile land]{inner north west}
16654 \inheritanchor[from=natoapp6c hostile land]{inner south west}
16655 \inheritanchor[from=natoapp6c hostile land]{inner south east}
16656 \inheritanchor[from=natoapp6c hostile land]{north east}
16657 \inheritanchor[from=natoapp6c hostile land]{north west}
16658 \inheritanchor[from=natoapp6c hostile land]{south east}
16659 \inheritanchor[from=natoapp6c hostile land]{south west}
16660 \inheritanchor[from=natoapp6c hostile land]{north}
16661 \inheritanchor[from=natoapp6c hostile land]{west}
16662 \inheritanchor[from=natoapp6c hostile land]{east}
16663 \inheritanchor[from=natoapp6c hostile land]{south}
16664 \inheritanchor[from=natoapp6c hostile land]{upper}
16665 \inheritanchor[from=natoapp6c hostile land]{lower}
16666 \inheritanchor[from=natoapp6c hostile land]{left}
16667 \inheritanchor[from=natoapp6c hostile land]{right}
16668 \inheritanchor[from=natoapp6c hostile land]{center}
16669 \inheritbackgroundpath[from=natoapp6c hostile land]
16670 \behindforegroundpath{
16671 \begin{n@to@pp@stroketofill}
16672 \n@to@hostile@l@nd%
16673 \pgfusepath{stroke}
16674 %
16675 \northeast \wg@tmpa=\pgf@x\wg@tmpb\pgf@y%
16676 \wg@tmpc=\wg@tmpb
16677 \advance\wg@tmpc\n@to@pp@inst@h%
16678 \advance\wg@tmpc-0.05cm%
16679 %
16680 \pgfpathmoveto{\pgfqpoint{ \wg@tmpa}{0cm}}
16681 \pgfpathlineto{\pgfqpoint{ \wg@tmpa}{\wg@tmpc}}
16682 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpc}}
16683 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{0cm}}
16684 \pgfpathlineto{\pgfqpoint{ 0cm}{\wg@tmpb}}
16685 \pgfclosepath%
16686 \pgfusepath{clip}
16687 %
16688 \wg@tmpd=\wg@tmpb%

```

```

16689 \advance\wg@tmpd-\n@to@pp@inst@h%
16690 %
16691 \pgfpathmoveto{\pgfqpoint{ \n@to@pp@inst@x}{\wg@tmpc}}%
16692 \pgfpathlineto{\pgfqpoint{-\n@to@pp@inst@x}{\wg@tmpc}}%
16693 \pgfpathlineto{\pgfqpoint{-\n@to@pp@inst@x}{\wg@tmpd}}%
16694 \pgfpathlineto{\pgfqpoint{ \n@to@pp@inst@x}{\wg@tmpd}}%
16695 \pgfclosepath
16696 \pgfusepath{fill}%
16697 \end{n@to@pp@stroketo@fill}
16698 }
16699 }

```

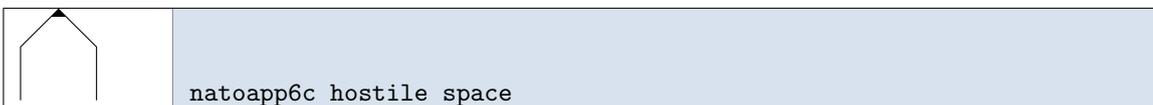


The hostile sea surface command. Same as land command

```

16700 \pgfdeclareshape{natoapp6c hostile sea surface}{%
16701 \inheritssavedanchors[from=natoapp6c hostile equipment]
16702 \inheritanchor[from=natoapp6c hostile equipment]{inner north east}
16703 \inheritanchor[from=natoapp6c hostile equipment]{inner north west}
16704 \inheritanchor[from=natoapp6c hostile equipment]{inner south west}
16705 \inheritanchor[from=natoapp6c hostile equipment]{inner south east}
16706 \inheritanchor[from=natoapp6c hostile equipment]{north east}
16707 \inheritanchor[from=natoapp6c hostile equipment]{north west}
16708 \inheritanchor[from=natoapp6c hostile equipment]{south east}
16709 \inheritanchor[from=natoapp6c hostile equipment]{south west}
16710 \inheritanchor[from=natoapp6c hostile equipment]{north}
16711 \inheritanchor[from=natoapp6c hostile equipment]{west}
16712 \inheritanchor[from=natoapp6c hostile equipment]{east}
16713 \inheritanchor[from=natoapp6c hostile equipment]{south}
16714 \inheritanchor[from=natoapp6c hostile equipment]{upper}
16715 \inheritanchor[from=natoapp6c hostile equipment]{lower}
16716 \inheritanchor[from=natoapp6c hostile equipment]{left}
16717 \inheritanchor[from=natoapp6c hostile equipment]{right}
16718 \inheritanchor[from=natoapp6c hostile equipment]{center}
16719 \inheritbackgroundpath[from=natoapp6c hostile equipment]
16720 \inheritbehindforegroundpath[from=natoapp6c hostile equipment]
16721 }

```



The hostile space command. Similar to air command, but with bar on top.

```

16722 \pgfdeclareshape{natoapp6c hostile space}{%
16723 \inheritssavedanchors[from=natoapp6c hostile air]
16724 \inheritanchor[from=natoapp6c hostile air]{north east}
16725 \inheritanchor[from=natoapp6c hostile air]{north west}

```

```

16726 \inheritanchor[from=natoapp6c hostile air]{south east}
16727 \inheritanchor[from=natoapp6c hostile air]{south west}
16728 \inheritanchor[from=natoapp6c hostile air]{north}
16729 \inheritanchor[from=natoapp6c hostile air]{west}
16730 \inheritanchor[from=natoapp6c hostile air]{east}
16731 \inheritanchor[from=natoapp6c hostile air]{south}
16732 \inheritanchor[from=natoapp6c hostile air]{upper}
16733 \inheritanchor[from=natoapp6c hostile air]{lower}
16734 \inheritanchor[from=natoapp6c hostile air]{left}
16735 \inheritanchor[from=natoapp6c hostile air]{right}
16736 \inheritanchor[from=natoapp6c hostile air]{center}
16737 \inheritbackgroundpath[from=natoapp6c hostile air]
16738 \behindforegroundpath{%
16739   \begin{n@to@pp@stroketo@fill}
16740     \n@to@hostile@air%
16741     \pgfusepath{stroke,clip}%
16742     %
16743     \north\wg@tmpa=\pgf@y\wg@tmpb=\pgf@y
16744     \advance\wg@tmpb-\n@to@pp@space@h
16745     %
16746     \pgfpathmoveto{\pgfqpoint{ \n@to@pp@r}{\wg@tmpa}}%
16747     \pgfpathlineto{\pgfqpoint{-\n@to@pp@r}{\wg@tmpa}}%
16748     \pgfpathlineto{\pgfqpoint{-\n@to@pp@r}{\wg@tmpb}}%
16749     \pgfpathlineto{\pgfqpoint{ \n@to@pp@r}{\wg@tmpb}}%
16750     \pgfclosepath%
16751     \pgfusepath{fill}%
16752   \end{n@to@pp@stroketo@fill}
16753 }
16754 }

```



Macro for hostile sub surface command

```

16755 \def\n@to@hostile@sub{%
16756   \northeast \wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
16757   \cntrl \wg@tmpc=\pgf@y%
16758   \south \wg@tmpd=\pgf@y%
16759   \pgfpathmoveto{\pgfqpoint{-\wg@tmpa}{\wg@tmpb}}%
16760   \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpc}}%
16761   \pgfpathlineto{\pgfqpoint{ 0cm}{\wg@tmpd}}%
16762   \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpc}}%
16763   \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
16764 }

```

The hostile sub surface command

```

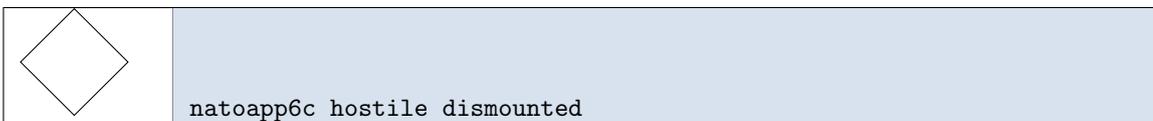
16765 \pgfdeclareshape{natoapp6c hostile sub surface}{%
16766   \inheritsavedanchors[from=natoapp6c base]
16767   \savedanchor\northeast{%
16768     \pgf@x=\n@to@pp@r%

```

```

16769 \pgf@y=\n@to@pp@r}
16770 \savedanchor\cntrl1{\pgf@x=\n@to@pp@r\pgf@y=-0.414\n@to@pp@r}
16771 \savedanchor\south{\pgf@x=0cm\pgf@y=-1.414\n@to@pp@r}
16772 \anchor{north east}{\northeast}
16773 \anchor{north west}{\northeast\pgf@x=-\pgf@x}
16774 \anchor{south east}{\northeast\wg@tmpa=\pgf@x\south\pgf@x=\wg@tmpa}
16775 \anchor{south west}{\northeast\wg@tmpa=\pgf@x\south\pgf@x=-\wg@tmpa}
16776 \anchor{south}{\south}
16777 \anchor{east}{
16778 \northeast\wg@tmpb=\pgf@y\wg@tmpa=\pgf@x%
16779 \south\wg@tmpc\pgf@y%
16780 \advance\wg@tmpb-\wg@tmpc
16781 \divide\wg@tmpb2%
16782 \advance\wg@tmpb\wg@tmpc%
16783 \pgf@x=\wg@tmpa%
16784 \pgf@y=\wg@tmpb}
16785 \anchor{west}{
16786 \northeast\wg@tmpb=\pgf@y\wg@tmpa=\pgf@x%
16787 \south\wg@tmpc\pgf@y%
16788 \advance\wg@tmpb-\wg@tmpc
16789 \divide\wg@tmpb2%
16790 \advance\wg@tmpb\wg@tmpc%
16791 \pgf@x=-\wg@tmpa%
16792 \pgf@y=\wg@tmpb}
16793 \anchor{north}{\northeast\pgf@x=0cm}
16794 \inheritanchor[from=natoapp6c base]{upper}
16795 \inheritanchor[from=natoapp6c base]{lower}
16796 \inheritanchor[from=natoapp6c base]{left}
16797 \inheritanchor[from=natoapp6c base]{right}
16798 \inheritanchor[from=natoapp6c base]{center}
16799 \backgroundpath{%
16800 \n@to@hostile@sub%
16801 }
16802 \behindforegroundpath{%
16803 \n@to@hostile@sub%
16804 \pgfusepath{stroke}%
16805 }
16806 }

```



The hostile dismounted command. Same as land command.

```

16807 \pgfdeclareshape{natoapp6c hostile dismounted}{%
16808 \inheritsavedanchors[from=natoapp6c hostile land]
16809 \inheritanchor[from=natoapp6c hostile land]{inner north east}
16810 \inheritanchor[from=natoapp6c hostile land]{inner north west}
16811 \inheritanchor[from=natoapp6c hostile land]{inner south west}
16812 \inheritanchor[from=natoapp6c hostile land]{inner south east}
16813 \inheritanchor[from=natoapp6c hostile land]{north east}

```

```

16814 \inheritanchor[from=natoapp6c hostile land]{north west}
16815 \inheritanchor[from=natoapp6c hostile land]{south east}
16816 \inheritanchor[from=natoapp6c hostile land]{south west}
16817 \inheritanchor[from=natoapp6c hostile land]{north}
16818 \inheritanchor[from=natoapp6c hostile land]{west}
16819 \inheritanchor[from=natoapp6c hostile land]{east}
16820 \inheritanchor[from=natoapp6c hostile land]{south}
16821 \inheritanchor[from=natoapp6c hostile land]{upper}
16822 \inheritanchor[from=natoapp6c hostile land]{lower}
16823 \inheritanchor[from=natoapp6c hostile land]{left}
16824 \inheritanchor[from=natoapp6c hostile land]{right}
16825 \inheritanchor[from=natoapp6c hostile land]{center}
16826 \inheritbackgroundpath[from=natoapp6c hostile land]
16827 \inheritbehindforegroundpath[from=natoapp6c hostile land]
16828 }

```

5.6.9 ‘Neutral’ node shapes

Macro for neutral shapes

```

16829 \def\n@to@pp@neutr@l@init{%
16830 \northeast\wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
16831 \def\n@to@pp@neutr@l@left {\pgflineto{\pgfqpoint{-\wg@tmpa}{-\wg@tmpb}}}%
16832 \def\n@to@pp@neutr@l@right {\pgflineto{\pgfqpoint{ \wg@tmpa}{ \wg@tmpb}}}%
16833 \def\n@to@pp@neutr@l@top {\pgflineto{\pgfqpoint{-\wg@tmpa}{ \wg@tmpb}}}%
16834 \def\n@to@pp@neutr@l@bottom{\pgflineto{\pgfqpoint{ \wg@tmpa}{-\wg@tmpb}}}%
16835 \def\n@to@pp@neutr@l@nw {\pgfmoveto{\pgfqpoint{-\wg@tmpa}{ \wg@tmpb}}}%
16836 \def\n@to@pp@neutr@l@ne {\pgfmoveto{\pgfqpoint{ \wg@tmpa}{ \wg@tmpb}}}%
16837 \def\n@to@pp@neutr@l@se {\pgfmoveto{\pgfqpoint{ \wg@tmpa}{-\wg@tmpb}}}%
16838 \def\n@to@pp@neutr@l@sw {\pgfmoveto{\pgfqpoint{-\wg@tmpa}{-\wg@tmpb}}}%
16839 }

```

		natoapp6c neutral air
--	--	-----------------------

The neutral air command

```

16840 \pgfdeclareshape{natoapp6c neutral air}{%
16841 \inheritsavedanchors[from=natoapp6c base]
16842 \savedanchor\northeast{\pgf@x=\n@to@pp@r\pgf@y=\n@to@pp@r}
16843 \anchor{north east}{\northeast}
16844 \anchor{north west}{\northeast\pgf@x=-\pgf@x}
16845 \anchor{south east}{\northeast\pgf@y=-\pgf@y}
16846 \anchor{south west}{\northeast\pgf@x=-\pgf@x\pgf@y=-\pgf@y}
16847 \anchor{north}{\northeast\pgf@x=0cm}
16848 \anchor{east}{\northeast\pgf@y=0cm}
16849 \anchor{west}{\northeast\pgf@x=-\pgf@x\pgf@y=0cm}
16850 \anchor{south}{\northeast\pgf@x=0cm\pgf@y=-\pgf@y}
16851 \inheritanchor[from=natoapp6c base]{upper}
16852 \inheritanchor[from=natoapp6c base]{lower}
16853 \inheritanchor[from=natoapp6c base]{left}

```

```

16854 \inheritanchor[from=natoapp6c base]{right}
16855 \inheritanchor[from=natoapp6c base]{center}
16856 \backgroundpath{%
16857   \n@to@pp@neutr@l@init%
16858   \n@to@pp@neutr@l@se
16859   \n@to@pp@neutr@l@right%
16860   \n@to@pp@neutr@l@top%
16861   \n@to@pp@neutr@l@left%
16862 }
16863 \behindforegroundpath{%
16864   \n@to@pp@neutr@l@init%
16865   \n@to@pp@neutr@l@se
16866   \n@to@pp@neutr@l@right%
16867   \n@to@pp@neutr@l@top%
16868   \n@to@pp@neutr@l@left%
16869   \pgfusepath{stroke}%
16870 }
16871 }

```



The neutral land command

```

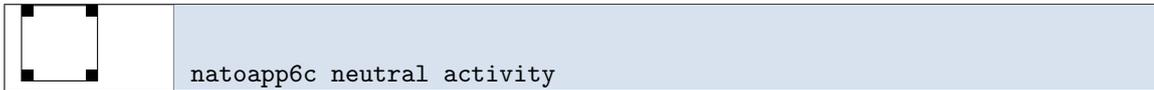
16872 \pgfdeclareshape{natoapp6c neutral land}{%
16873   \inheritssavedanchors[from=natoapp6c neutral air]
16874   \inheritanchor[from=natoapp6c neutral air]{north east}
16875   \inheritanchor[from=natoapp6c neutral air]{north west}
16876   \inheritanchor[from=natoapp6c neutral air]{south east}
16877   \inheritanchor[from=natoapp6c neutral air]{south west}
16878   \inheritanchor[from=natoapp6c neutral air]{north}
16879   \inheritanchor[from=natoapp6c neutral air]{west}
16880   \inheritanchor[from=natoapp6c neutral air]{east}
16881   \inheritanchor[from=natoapp6c neutral air]{south}
16882   \inheritanchor[from=natoapp6c neutral air]{upper}
16883   \inheritanchor[from=natoapp6c neutral air]{lower}
16884   \inheritanchor[from=natoapp6c neutral air]{left}
16885   \inheritanchor[from=natoapp6c neutral air]{right}
16886   \inheritanchor[from=natoapp6c neutral air]{center}
16887   \backgroundpath{%
16888     \n@to@pp@neutr@l@init%
16889     \n@to@pp@neutr@l@ne
16890     \n@to@pp@neutr@l@top%
16891     \n@to@pp@neutr@l@left%
16892     \n@to@pp@neutr@l@bottom%
16893     \pgfclosepath
16894   }
16895   \behindforegroundpath{%
16896     \n@to@pp@neutr@l@init%
16897     \n@to@pp@neutr@l@ne
16898     \n@to@pp@neutr@l@top%
16899     \n@to@pp@neutr@l@left%

```

```

16900 \n@to@pp@neutr@l@bottom%
16901 \pgfclosepath
16902 \pgfusepath{stroke}%
16903 }
16904 }

```



The neutral activity command. Similar to land command but with boxes added in the corners.

```

16905 \pgfdeclareshape{natoapp6c neutral activity}{%
16906 \inheritssavedanchors[from=natoapp6c neutral land]
16907 \inheritanchor[from=natoapp6c neutral land]{center}
16908 \inheritanchor[from=natoapp6c neutral land]{inner north east}
16909 \inheritanchor[from=natoapp6c neutral land]{inner north west}
16910 \inheritanchor[from=natoapp6c neutral land]{inner south west}
16911 \inheritanchor[from=natoapp6c neutral land]{inner south east}
16912 \inheritanchor[from=natoapp6c neutral land]{north east}
16913 \inheritanchor[from=natoapp6c neutral land]{north west}
16914 \inheritanchor[from=natoapp6c neutral land]{south east}
16915 \inheritanchor[from=natoapp6c neutral land]{south west}
16916 \inheritanchor[from=natoapp6c neutral land]{north}
16917 \inheritanchor[from=natoapp6c neutral land]{west}
16918 \inheritanchor[from=natoapp6c neutral land]{east}
16919 \inheritanchor[from=natoapp6c neutral land]{south}
16920 \inheritanchor[from=natoapp6c neutral land]{upper}
16921 \inheritanchor[from=natoapp6c neutral land]{lower}
16922 \inheritanchor[from=natoapp6c neutral land]{left}
16923 \inheritanchor[from=natoapp6c neutral land]{right}
16924 \inheritanchor[from=natoapp6c neutral land]{center}
16925 \inheritbackgroundpath[from=natoapp6c neutral land]
16926 \behindforegroundpath{
16927 \begin{n@to@pp@stroketofill}
16928 \n@to@pp@neutr@l@init%
16929 \n@to@pp@neutr@l@ne
16930 \n@to@pp@neutr@l@top%
16931 \n@to@pp@neutr@l@left%
16932 \n@to@pp@neutr@l@bottom%
16933 \pgfclosepath
16934 \pgfusepath{stroke}
16935 %
16936 \northeast \wg@tmpa=\pgf@x\wg@tmpb\pgf@y%
16937 \wg@tmpc=\wg@tmpa\advance\wg@tmpc-\n@to@pp@act@w
16938 \wg@tmpd=\wg@tmpb\advance\wg@tmpd-\n@to@pp@act@w
16939 %
16940 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
16941 \pgfpathlineto{\pgfqpoint{\wg@tmpc}{\wg@tmpb}}%
16942 \pgfpathlineto{\pgfqpoint{\wg@tmpc}{\wg@tmpd}}%
16943 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpd}}%
16944 \pgfclosepath
16945 \pgfusepath{fill}%

```

```

16946 %
16947 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{-\wg@tmpd}}%
16948 \pgfpathlineto{\pgfqpoint{\wg@tmpc}{-\wg@tmpd}}%
16949 \pgfpathlineto{\pgfqpoint{\wg@tmpc}{-\wg@tmpb}}%
16950 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{-\wg@tmpb}}%
16951 \pgfclosepath
16952 \pgfusepath{fill}%
16953 %
16954 \pgfpathmoveto{\pgfqpoint{-\wg@tmpc}{\wg@tmpb}}%
16955 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpb}}%
16956 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpd}}%
16957 \pgfpathlineto{\pgfqpoint{-\wg@tmpc}{\wg@tmpd}}%
16958 \pgfclosepath
16959 \pgfusepath{fill}%
16960 %
16961 \pgfpathmoveto{\pgfqpoint{-\wg@tmpc}{-\wg@tmpd}}%
16962 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{-\wg@tmpd}}%
16963 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{-\wg@tmpb}}%
16964 \pgfpathlineto{\pgfqpoint{-\wg@tmpc}{-\wg@tmpb}}%
16965 \pgfclosepath
16966 \pgfusepath{fill}%
16967 \end{to@pp@stroketo@fill}
16968 }
16969 }

```

	natoapp6c neutral equipment
--	-----------------------------

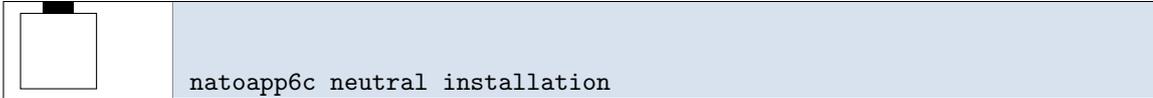
The neutral equipment command. Same as land command

```

16970 \pgfdeclareshape{natoapp6c neutral equipment}{%
16971 \inheritshapedanchors[from=natoapp6c neutral land]
16972 \inheritanchors[from=natoapp6c neutral land]{center}
16973 \inheritanchors[from=natoapp6c neutral land]{inner north east}
16974 \inheritanchors[from=natoapp6c neutral land]{inner north west}
16975 \inheritanchors[from=natoapp6c neutral land]{inner south west}
16976 \inheritanchors[from=natoapp6c neutral land]{inner south east}
16977 \inheritanchors[from=natoapp6c neutral land]{north east}
16978 \inheritanchors[from=natoapp6c neutral land]{north west}
16979 \inheritanchors[from=natoapp6c neutral land]{south east}
16980 \inheritanchors[from=natoapp6c neutral land]{south west}
16981 \inheritanchors[from=natoapp6c neutral land]{north}
16982 \inheritanchors[from=natoapp6c neutral land]{west}
16983 \inheritanchors[from=natoapp6c neutral land]{east}
16984 \inheritanchors[from=natoapp6c neutral land]{south}
16985 \inheritanchors[from=natoapp6c neutral land]{upper}
16986 \inheritanchors[from=natoapp6c neutral land]{lower}
16987 \inheritanchors[from=natoapp6c neutral land]{left}
16988 \inheritanchors[from=natoapp6c neutral land]{right}
16989 \inheritbackgroundpath[from=natoapp6c neutral land]
16990 \inheritbehindbackgroundpath[from=natoapp6c neutral land]

```

16992 }



The neutral installation command. Similar to land command but with a ‘hat’ on top.

```
16993 \pgfdeclareshape{natoapp6c neutral installation}{%
16994   \inheritshadedanchors[from=natoapp6c neutral land]
16995   \inheritanchor[from=natoapp6c neutral land]{center}
16996   \inheritanchor[from=natoapp6c neutral land]{inner north east}
16997   \inheritanchor[from=natoapp6c neutral land]{inner north west}
16998   \inheritanchor[from=natoapp6c neutral land]{inner south west}
16999   \inheritanchor[from=natoapp6c neutral land]{inner south east}
17000   \inheritanchor[from=natoapp6c neutral land]{north east}
17001   \inheritanchor[from=natoapp6c neutral land]{north west}
17002   \inheritanchor[from=natoapp6c neutral land]{south east}
17003   \inheritanchor[from=natoapp6c neutral land]{south west}
17004   \inheritanchor[from=natoapp6c neutral land]{north}
17005   \inheritanchor[from=natoapp6c neutral land]{west}
17006   \inheritanchor[from=natoapp6c neutral land]{east}
17007   \inheritanchor[from=natoapp6c neutral land]{south}
17008   \inheritanchor[from=natoapp6c neutral land]{upper}
17009   \inheritanchor[from=natoapp6c neutral land]{lower}
17010   \inheritanchor[from=natoapp6c neutral land]{left}
17011   \inheritanchor[from=natoapp6c neutral land]{right}
17012   \inheritanchor[from=natoapp6c neutral land]{center}
17013   \inheritbackgroundpath[from=natoapp6c neutral land]
17014   \behindforegroundpath{
17015     \begin{n@to@pp@stroketo@fill}
17016       \n@to@pp@neutr@l@init%
17017       \n@to@pp@neutr@l@ne
17018       \n@to@pp@neutr@l@top%
17019       \n@to@pp@neutr@l@left%
17020       \n@to@pp@neutr@l@bottom%
17021       \pgfclosepath
17022       \pgfusepath{stroke}
17023       %
17024       \northeast \wg@tmpa=\pgf@y%
17025       \wg@tmpb=\wg@tmpa\advance\wg@tmpb\n@to@pp@inst@h%
17026       %
17027       \pgfpathmoveto{\pgfqpoint{ \n@to@pp@inst@x}{\wg@tmpb}}%
17028       \pgfpathlineto{\pgfqpoint{-\n@to@pp@inst@x}{\wg@tmpb}}%
17029       \pgfpathlineto{\pgfqpoint{-\n@to@pp@inst@x}{\wg@tmpa}}%
17030       \pgfpathlineto{\pgfqpoint{ \n@to@pp@inst@x}{\wg@tmpa}}%
17031       \pgfclosepath
17032       \pgfusepath{fill}%
17033     \end{n@to@pp@stroketo@fill}
17034   }
17035 }
```

	natoapp6c neutral sea surface
--	-------------------------------

The neutral sea surface command. Same as land command.

```
17036 \pgfdeclareshape{natoapp6c neutral sea surface}{%
17037   \inheritssavedanchors[from=natoapp6c neutral equipment]
17038   \inheritanchor[from=natoapp6c neutral equipment]{inner north east}
17039   \inheritanchor[from=natoapp6c neutral equipment]{inner north west}
17040   \inheritanchor[from=natoapp6c neutral equipment]{inner south west}
17041   \inheritanchor[from=natoapp6c neutral equipment]{inner south east}
17042   \inheritanchor[from=natoapp6c neutral equipment]{north east}
17043   \inheritanchor[from=natoapp6c neutral equipment]{north west}
17044   \inheritanchor[from=natoapp6c neutral equipment]{south east}
17045   \inheritanchor[from=natoapp6c neutral equipment]{south west}
17046   \inheritanchor[from=natoapp6c neutral equipment]{north}
17047   \inheritanchor[from=natoapp6c neutral equipment]{west}
17048   \inheritanchor[from=natoapp6c neutral equipment]{east}
17049   \inheritanchor[from=natoapp6c neutral equipment]{south}
17050   \inheritanchor[from=natoapp6c neutral equipment]{upper}
17051   \inheritanchor[from=natoapp6c neutral equipment]{lower}
17052   \inheritanchor[from=natoapp6c neutral equipment]{left}
17053   \inheritanchor[from=natoapp6c neutral equipment]{right}
17054   \inheritanchor[from=natoapp6c neutral equipment]{center}
17055   \inheritbackgroundpath[from=natoapp6c neutral equipment]
17056   \inheritbehindforegroundpath[from=natoapp6c neutral equipment]
17057 }
```

	natoapp6c neutral space
--	-------------------------

The neutral space command. Similar to air command but with a bar.

```
17058 \pgfdeclareshape{natoapp6c neutral space}{%
17059   \inheritssavedanchors[from=natoapp6c neutral air]
17060   \inheritanchor[from=natoapp6c neutral air]{north east}
17061   \inheritanchor[from=natoapp6c neutral air]{north west}
17062   \inheritanchor[from=natoapp6c neutral air]{south east}
17063   \inheritanchor[from=natoapp6c neutral air]{south west}
17064   \inheritanchor[from=natoapp6c neutral air]{north}
17065   \inheritanchor[from=natoapp6c neutral air]{west}
17066   \inheritanchor[from=natoapp6c neutral air]{east}
17067   \inheritanchor[from=natoapp6c neutral air]{south}
17068   \inheritanchor[from=natoapp6c neutral air]{upper}
17069   \inheritanchor[from=natoapp6c neutral air]{lower}
17070   \inheritanchor[from=natoapp6c neutral air]{left}
17071   \inheritanchor[from=natoapp6c neutral air]{right}
17072   \inheritanchor[from=natoapp6c neutral air]{center}
17073   \inheritbackgroundpath[from=natoapp6c neutral air]
17074   \behindforegroundpath{%
17075     \begin{n@to@pp@stroketo@fill}
17076     \n@to@pp@neutr@l@init%
```

```

17077 \n@to@pp@neutr@l@se
17078 \n@to@pp@neutr@l@right%
17079 \n@to@pp@neutr@l@top%
17080 \n@to@pp@neutr@l@left%
17081 \pgfusepath{stroke}%
17082 %
17083 \n@to@pp@neutr@l@ne
17084 \n@to@pp@neutr@l@top%
17085 \northeast\wg@tmpa=\pgf@x\wg@tmpb=\pgf@y%
17086 \advance\wg@tmpb-\n@to@pp@space@h
17087 %
17088 \pgfpathlineto{\pgfpoint{-\wg@tmpa}{\wg@tmpc}}%
17089 \pgfpathlineto{\pgfpoint{-\wg@tmpa}{\wg@tmpb}}%
17090 \pgfpathlineto{\pgfpoint{\wg@tmpa}{\wg@tmpb}}%
17091 \pgfclosepath%
17092 \pgfusepath{fill}%
17093 \end{n@to@pp@stroketo@fill}
17094 }
17095 }

```

	natoapp6c neutral sub surface
--	-------------------------------

The neutral sub surface command

```

17096 \pgfdeclareshape{natoapp6c neutral sub surface}{%
17097 \inherit@savedanchors[from=natoapp6c neutral air]
17098 \inheritanchor[from=natoapp6c neutral air]{north east}
17099 \inheritanchor[from=natoapp6c neutral air]{north west}
17100 \inheritanchor[from=natoapp6c neutral air]{south east}
17101 \inheritanchor[from=natoapp6c neutral air]{south west}
17102 \inheritanchor[from=natoapp6c neutral air]{north}
17103 \inheritanchor[from=natoapp6c neutral air]{west}
17104 \inheritanchor[from=natoapp6c neutral air]{east}
17105 \inheritanchor[from=natoapp6c neutral air]{south}
17106 \inheritanchor[from=natoapp6c neutral air]{upper}
17107 \inheritanchor[from=natoapp6c neutral air]{lower}
17108 \inheritanchor[from=natoapp6c neutral air]{left}
17109 \inheritanchor[from=natoapp6c neutral air]{right}
17110 \inheritanchor[from=natoapp6c neutral air]{center}
17111 \backgroundpath{%
17112 \n@to@pp@neutr@l@init%
17113 \n@to@pp@neutr@l@nw
17114 \n@to@pp@neutr@l@left%
17115 \n@to@pp@neutr@l@bottom%
17116 \n@to@pp@neutr@l@right%
17117 }
17118 \behindforegroundpath{%
17119 \n@to@pp@neutr@l@init%
17120 \n@to@pp@neutr@l@nw
17121 \n@to@pp@neutr@l@left%
17122 \n@to@pp@neutr@l@bottom%

```

```

17123 \n@to@pp@neutr@l@right%
17124 \pgfusepath{stroke}%
17125 }
17126 }

```

natoapp6c neutral dismantled

The neutral dismantled command. Same as land command

```

17127 \pgfdeclareshape{natoapp6c neutral dismantled}{%
17128 \inheritssavedanchors[from=natoapp6c neutral land]
17129 \inheritanchor[from=natoapp6c neutral land]{center}
17130 \inheritanchor[from=natoapp6c neutral land]{inner north east}
17131 \inheritanchor[from=natoapp6c neutral land]{inner north west}
17132 \inheritanchor[from=natoapp6c neutral land]{inner south west}
17133 \inheritanchor[from=natoapp6c neutral land]{inner south east}
17134 \inheritanchor[from=natoapp6c neutral land]{north east}
17135 \inheritanchor[from=natoapp6c neutral land]{north west}
17136 \inheritanchor[from=natoapp6c neutral land]{south east}
17137 \inheritanchor[from=natoapp6c neutral land]{south west}
17138 \inheritanchor[from=natoapp6c neutral land]{north}
17139 \inheritanchor[from=natoapp6c neutral land]{west}
17140 \inheritanchor[from=natoapp6c neutral land]{east}
17141 \inheritanchor[from=natoapp6c neutral land]{south}
17142 \inheritanchor[from=natoapp6c neutral land]{upper}
17143 \inheritanchor[from=natoapp6c neutral land]{lower}
17144 \inheritanchor[from=natoapp6c neutral land]{left}
17145 \inheritanchor[from=natoapp6c neutral land]{right}
17146 \inheritanchor[from=natoapp6c neutral land]{center}
17147 \inheritbackgroundpath[from=natoapp6c neutral land]
17148 \inheritbehindbackgroundpath[from=natoapp6c neutral land]
17149 }

```

5.6.10 ‘Unknown’ node shapes

Macro to define unknown path elements

```

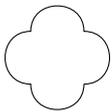
17150 \def\n@to@pp@unknown@init{%
17151 \def\n@to@pp@unknown@top{%
17152 \innernortheast \wg@tmpa=\pgf@x%
17153 \cntrlnortheast \wg@tmpb=\pgf@x%
17154 \pgfpathcurveto{%
17155 \pgfqpoint{ \wg@tmpa}{\wg@tmpb}}{%
17156 \pgfqpoint{-\wg@tmpa}{\wg@tmpb}}{%
17157 \pgfqpoint{-\wg@tmpa}{\wg@tmpa}}
17158 \def\n@to@pp@unknown@left{%
17159 \innernortheast \wg@tmpa=\pgf@x%
17160 \cntrlnortheast \wg@tmpb=\pgf@x%
17161 \pgfpathcurveto{%
17162 \pgfqpoint{-\wg@tmpb}{ \wg@tmpa}}{%

```

```

17163     \pgfqpoint{-\wg@tmpb}{-\wg@tmpa}}{%
17164     \pgfqpoint{-\wg@tmpa}{-\wg@tmpa}}
17165 \def\n@to@pp@unknown@bottom{%
17166     \innernortheast \wg@tmpa=\pgf@x%
17167     \cntrlnortheast \wg@tmpb=\pgf@x%
17168     \pgfpathcurveto{%
17169     \pgfqpoint{-\wg@tmpa}{-\wg@tmpb}}{%
17170     \pgfqpoint{ \wg@tmpa}{-\wg@tmpb}}{%
17171     \pgfqpoint{ \wg@tmpa}{-\wg@tmpa}}
17172 \def\n@to@pp@unknown@right{%
17173     \innernortheast \wg@tmpa=\pgf@x%
17174     \cntrlnortheast \wg@tmpb=\pgf@x%
17175     \pgfpathcurveto{%
17176     \pgfqpoint{ \wg@tmpb}{-\wg@tmpa}}{%
17177     \pgfqpoint{ \wg@tmpb}{ \wg@tmpa}}{%
17178     \pgfqpoint{ \wg@tmpa}{ \wg@tmpa}}
17179 }

```



natoapp6c unknown land

The unknown land command

```

17180 \pgfdeclareshape{natoapp6c unknown land}{%
17181     \inheritssavedanchors[from=natoapp6c base]
17182     \savedanchor\innernortheast{\pgf@x=.7\n@to@pp@r\pgf@y=.7\n@to@pp@r}
17183     \savedanchor\cntrlnortheast{\pgf@x=1.6\n@to@pp@r\pgf@y=1.6\n@to@pp@r}
17184     \savedanchor\northeast{\pgf@x=1.4\n@to@pp@r\pgf@y=1.4\n@to@pp@r}
17185     \anchor{inner north east}{\innernortheast}
17186     \anchor{inner north west}{\innernortheast\pgf@x=-\pgf@x}
17187     \anchor{inner south west}{\innernortheast\pgf@x=-\pgf@x\pgf@y=-\pgf@y}
17188     \anchor{inner south east}{\innernortheast\pgf@y=-\pgf@y}
17189     \anchor{north east}{\northeast}
17190     \anchor{north west}{\northeast\pgf@x=-\pgf@x}
17191     \anchor{south west}{\northeast\pgf@x=-\pgf@x\pgf@y=-\pgf@y}
17192     \anchor{south east}{\northeast\pgf@y=-\pgf@y}
17193     \anchor{north}{\northeast\pgf@x=0cm}
17194     \anchor{east}{\northeast\pgf@y=0cm}
17195     \anchor{south}{\northeast\pgf@x=0cm\pgf@y=-\pgf@y}
17196     \anchor{west}{\northeast\pgf@x=-\pgf@x\pgf@y=0cm}
17197     \inheritanchor[from=natoapp6c base]{center}
17198     \inheritanchor[from=natoapp6c base]{upper}
17199     \inheritanchor[from=natoapp6c base]{lower}
17200     \inheritanchor[from=natoapp6c base]{left}
17201     \inheritanchor[from=natoapp6c base]{right}
17202     \backgroundpath{%
17203         \n@to@pp@unknown@init
17204         \innernortheast \wg@tmpa=\pgf@x%
17205         \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{-\wg@tmpa}}%
17206         \n@to@pp@unknown@right %

```

```

17207 \n@to@pp@unknown@top %
17208 \n@to@pp@unknown@left %
17209 \n@to@pp@unknown@bottom%
17210 }
17211 \behindforegroundpath{%
17212 \n@to@pp@unknown@init
17213 \innernortheast \wg@tmpa=\pgf@x%
17214 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{-\wg@tmpa}}%
17215 \n@to@pp@unknown@right %
17216 \n@to@pp@unknown@top %
17217 \n@to@pp@unknown@left %
17218 \n@to@pp@unknown@bottom%
17219 \pgfusepath{stroke}}
17220 }

```



natoapp6c unknown air

The unknown air command. To consider: Should clipping path extend below the actual symbol to include that part of the base symbol?

```

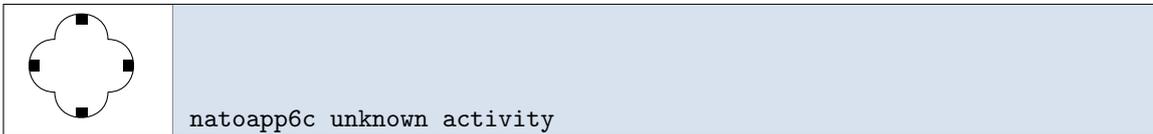
17221 \pgfdeclareshape{natoapp6c unknown air}{%
17222 \inheritshadedanchors[from=natoapp6c unknown land]
17223 \inheritanchor[from=natoapp6c unknown land]{inner north east}
17224 \inheritanchor[from=natoapp6c unknown land]{inner north west}
17225 \inheritanchor[from=natoapp6c unknown land]{inner south west}
17226 \inheritanchor[from=natoapp6c unknown land]{inner south east}
17227 \inheritanchor[from=natoapp6c unknown land]{north east}
17228 \inheritanchor[from=natoapp6c unknown land]{north west}
17229 \inheritanchor[from=natoapp6c unknown land]{north}
17230 \inheritanchor[from=natoapp6c unknown land]{west}
17231 \inheritanchor[from=natoapp6c unknown land]{east}
17232 \inheritanchor[from=natoapp6c unknown land]{upper}
17233 \inheritanchor[from=natoapp6c unknown land]{lower}
17234 \inheritanchor[from=natoapp6c unknown land]{left}
17235 \inheritanchor[from=natoapp6c unknown land]{right}
17236 \inheritanchor[from=natoapp6c unknown land]{center}
17237 \anchor{south}{\innernortheast\pgf@x=0cm\pgf@y=-\pgf@y}
17238 \anchor{south east}{
17239 \northeast\wg@tmpa=\pgf@x
17240 \innernortheast\pgf@y=-\pgf@y
17241 \pgf@x=\wg@tmpa}
17242 \anchor{south west}{
17243 \northeast\wg@tmpa=\pgf@x
17244 \innernortheast\pgf@y=-\pgf@y
17245 \pgf@x=-\wg@tmpa}
17246 \backgroundpath{%
17247 \n@to@pp@unknown@init
17248 \innernortheast \wg@tmpa=\pgf@x%
17249 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{-\wg@tmpa}}%
17250 \n@to@pp@unknown@right %

```

```

17251 \n@to@pp@unknown@top %
17252 \n@to@pp@unknown@left %
17253 \ifn@to@pp@isclip
17254 \pgfpathlineto{\pgfqpoint{0cm}{-\radius}}
17255 \pgfpathclose
17256 \fi
17257 }
17258 \behindforegroundpath{%
17259 \n@to@pp@unknown@init
17260 \innernortheast \wg@tmpa=\pgf@x%
17261 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{-\wg@tmpa}}%
17262 \n@to@pp@unknown@right %
17263 \n@to@pp@unknown@top %
17264 \n@to@pp@unknown@left %
17265 \pgfusepath{stroke}%
17266 }
17267 }

```



The unknown activity command. Similar to land command, but with boxes in the the ‘corners’.

```

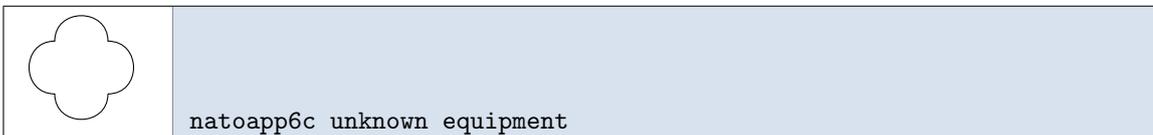
17268 \pgfdeclareshape{natoapp6c unknown activity}{%
17269 \inheritshapedanchors[from=natoapp6c unknown land]
17270 \inheritanchor[from=natoapp6c unknown land]{inner north east}
17271 \inheritanchor[from=natoapp6c unknown land]{inner north west}
17272 \inheritanchor[from=natoapp6c unknown land]{inner south west}
17273 \inheritanchor[from=natoapp6c unknown land]{inner south east}
17274 \inheritanchor[from=natoapp6c unknown land]{north east}
17275 \inheritanchor[from=natoapp6c unknown land]{north west}
17276 \inheritanchor[from=natoapp6c unknown land]{south east}
17277 \inheritanchor[from=natoapp6c unknown land]{south west}
17278 \inheritanchor[from=natoapp6c unknown land]{north}
17279 \inheritanchor[from=natoapp6c unknown land]{west}
17280 \inheritanchor[from=natoapp6c unknown land]{east}
17281 \inheritanchor[from=natoapp6c unknown land]{south}
17282 \inheritanchor[from=natoapp6c unknown land]{upper}
17283 \inheritanchor[from=natoapp6c unknown land]{lower}
17284 \inheritanchor[from=natoapp6c unknown land]{left}
17285 \inheritanchor[from=natoapp6c unknown land]{right}
17286 \inheritanchor[from=natoapp6c unknown land]{center}
17287 \inheritbackgroundpath[from=natoapp6c unknown land]
17288 \behindforegroundpath{
17289 \n@to@pp@unknown@init
17290 \innernortheast \wg@tmpa=\pgf@x%
17291 \begin{n@to@pp@stroketofill}
17292 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{-\wg@tmpa}}%
17293 \n@to@pp@unknown@right %
17294 \n@to@pp@unknown@top %

```

```

17295 \n@to@pp@unknown@left %
17296 \n@to@pp@unknown@bottom%
17297 \pgfusepath{stroke,clip}
17298 %
17299 \northeast\wg@tmpa\pgf@x
17300 \advance\wg@tmpa0.005cm
17301 \wg@tmpb=\wg@tmpa
17302 \advance\wg@tmpb-\n@to@pp@act@w
17303 \wg@tmpc=\n@to@pp@act@w
17304 \divide\wg@tmpc2
17305 %
17306 \pgfpathmoveto{\pgfqpoint{ \wg@tmpc}{\wg@tmpa}}%
17307 \pgfpathlineto{\pgfqpoint{-\wg@tmpc}{\wg@tmpa}}%
17308 \pgfpathlineto{\pgfqpoint{-\wg@tmpc}{\wg@tmpb}}%
17309 \pgfpathlineto{\pgfqpoint{ \wg@tmpc}{\wg@tmpb}}%
17310 \pgfclosepath%
17311 \pgfusepath{fill}
17312 %
17313 \pgfpathmoveto{\pgfqpoint{ \wg@tmpc}{-\wg@tmpb}}%
17314 \pgfpathlineto{\pgfqpoint{-\wg@tmpc}{-\wg@tmpb}}%
17315 \pgfpathlineto{\pgfqpoint{-\wg@tmpc}{-\wg@tmpa}}%
17316 \pgfpathlineto{\pgfqpoint{ \wg@tmpc}{-\wg@tmpa}}%
17317 \pgfclosepath%
17318 \pgfusepath{fill}
17319 %
17320 \pgfpathmoveto{\pgfqpoint{ \wg@tmpa}{ \wg@tmpc}}%
17321 \pgfpathlineto{\pgfqpoint{ \wg@tmpb}{ \wg@tmpc}}%
17322 \pgfpathlineto{\pgfqpoint{ \wg@tmpb}{-\wg@tmpc}}%
17323 \pgfpathlineto{\pgfqpoint{ \wg@tmpa}{-\wg@tmpc}}%
17324 \pgfclosepath%
17325 \pgfusepath{fill}
17326 %
17327 \pgfpathmoveto{\pgfqpoint{-\wg@tmpb}{ \wg@tmpc}}%
17328 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{ \wg@tmpc}}%
17329 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{-\wg@tmpc}}%
17330 \pgfpathlineto{\pgfqpoint{-\wg@tmpb}{-\wg@tmpc}}%
17331 \pgfclosepath%
17332 \pgfusepath{fill}
17333 \end{n@to@pp@stroketo@fill}
17334 }
17335 }

```



The unknown equipment command. Same as land command.

```

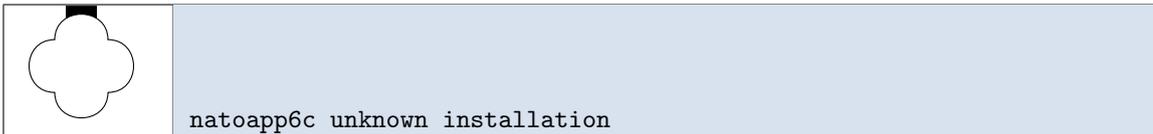
17336 \pgfdeclareshape{natoapp6c unknown equipment}{%
17337 \inheritavedanchors[from=natoapp6c unknown land]
17338 \inheritanchor[from=natoapp6c unknown land]{inner north east}

```

```

17339 \inheritanchor[from=natoapp6c unknown land]{inner north west}
17340 \inheritanchor[from=natoapp6c unknown land]{inner south west}
17341 \inheritanchor[from=natoapp6c unknown land]{inner south east}
17342 \inheritanchor[from=natoapp6c unknown land]{north east}
17343 \inheritanchor[from=natoapp6c unknown land]{north west}
17344 \inheritanchor[from=natoapp6c unknown land]{south east}
17345 \inheritanchor[from=natoapp6c unknown land]{south west}
17346 \inheritanchor[from=natoapp6c unknown land]{north}
17347 \inheritanchor[from=natoapp6c unknown land]{west}
17348 \inheritanchor[from=natoapp6c unknown land]{east}
17349 \inheritanchor[from=natoapp6c unknown land]{south}
17350 \inheritanchor[from=natoapp6c unknown land]{upper}
17351 \inheritanchor[from=natoapp6c unknown land]{lower}
17352 \inheritanchor[from=natoapp6c unknown land]{left}
17353 \inheritanchor[from=natoapp6c unknown land]{right}
17354 \inheritanchor[from=natoapp6c unknown land]{center}
17355 \inheritbackgroundpath[from=natoapp6c unknown land]
17356 \inheritbehindforegroundpath[from=natoapp6c unknown land]
17357 }

```



The unknown installation command. Similar to land command, but with a ‘hat’ on top. Note, NATO App6(d) makes the ‘hat’ lower part disconnected from the main symbol. I find that ugly, so we do it like NATO App6(c).

```

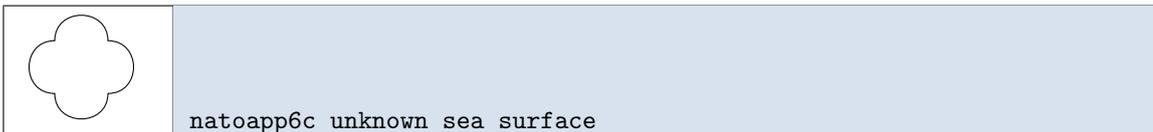
17358 \pgfdeclareshape{natoapp6c unknown installation}{%
17359 \inheritshapedanchors[from=natoapp6c unknown land]
17360 \inheritanchor[from=natoapp6c unknown land]{center}
17361 \inheritanchor[from=natoapp6c unknown land]{inner north east}
17362 \inheritanchor[from=natoapp6c unknown land]{inner north west}
17363 \inheritanchor[from=natoapp6c unknown land]{inner south west}
17364 \inheritanchor[from=natoapp6c unknown land]{inner south east}
17365 \inheritanchor[from=natoapp6c unknown land]{north east}
17366 \inheritanchor[from=natoapp6c unknown land]{north west}
17367 \inheritanchor[from=natoapp6c unknown land]{south east}
17368 \inheritanchor[from=natoapp6c unknown land]{south west}
17369 \inheritanchor[from=natoapp6c unknown land]{north}
17370 \inheritanchor[from=natoapp6c unknown land]{west}
17371 \inheritanchor[from=natoapp6c unknown land]{east}
17372 \inheritanchor[from=natoapp6c unknown land]{south}
17373 \inheritanchor[from=natoapp6c unknown land]{upper}
17374 \inheritanchor[from=natoapp6c unknown land]{lower}
17375 \inheritanchor[from=natoapp6c unknown land]{left}
17376 \inheritanchor[from=natoapp6c unknown land]{right}
17377 \inheritanchor[from=natoapp6c unknown land]{center}
17378 \inheritbackgroundpath[from=natoapp6c unknown land]
17379 \behindforegroundpath{
17380 \natoapp6c unknown@init
17381 \innernortheast \wg@tmpa=\pgf@x%

```

```

17382
17383 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{-\wg@tmpa}}%
17384 \n@to@pp@unknown@right %
17385 \n@to@pp@unknown@top %
17386 \n@to@pp@unknown@left %
17387 \n@to@pp@unknown@bottom%
17388 \pgfusepath{stroke}
17389 %
17390 \begin{n@to@pp@stroketo@fill}
17391 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{\wg@tmpa}}%
17392 \n@to@pp@unknown@top %
17393 %
17394 \northeast\wg@tmpb=\pgfy\wg@tmpc=\pgfy%
17395 \advance\wg@tmpb\n@to@pp@inst@h%
17396 \advance\wg@tmpb-0.05cm%
17397 \advance\wg@tmpc-\n@to@pp@inst@h%
17398 \advance\wg@tmpc-\n@to@pp@inst@h%
17399 %
17400 \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpb}}%
17401 \pgfpathlineto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
17402 \pgfclosepath%
17403 \pgfusepath{clip}%
17404 %
17405 \pgfpathmoveto{\pgfqpoint{\n@to@pp@inst@x}{\wg@tmpb}}%
17406 \pgfpathlineto{\pgfqpoint{-\n@to@pp@inst@x}{\wg@tmpb}}%
17407 \pgfpathlineto{\pgfqpoint{-\n@to@pp@inst@x}{\wg@tmpc}}%
17408 \pgfpathlineto{\pgfqpoint{\n@to@pp@inst@x}{\wg@tmpc}}%
17409 \pgfclosepath%
17410 \pgfusepath{fill}%
17411 \end{n@to@pp@stroketo@fill}
17412 }
17413 }

```



The unknown sea surface command. Same as land command

```

17414 \pgfdeclareshape{natoapp6c unknown sea surface}{%
17415 \inherit savedanchors[from=natoapp6c unknown land]
17416 \inherit anchor[from=natoapp6c unknown land]{inner north east}
17417 \inherit anchor[from=natoapp6c unknown land]{inner north west}
17418 \inherit anchor[from=natoapp6c unknown land]{inner south west}
17419 \inherit anchor[from=natoapp6c unknown land]{inner south east}
17420 \inherit anchor[from=natoapp6c unknown land]{north east}
17421 \inherit anchor[from=natoapp6c unknown land]{north west}
17422 \inherit anchor[from=natoapp6c unknown land]{south east}
17423 \inherit anchor[from=natoapp6c unknown land]{south west}
17424 \inherit anchor[from=natoapp6c unknown land]{north}
17425 \inherit anchor[from=natoapp6c unknown land]{west}

```

```

17426 \inheritanchor[from=natoapp6c unknown land]{east}
17427 \inheritanchor[from=natoapp6c unknown land]{south}
17428 \inheritanchor[from=natoapp6c unknown land]{upper}
17429 \inheritanchor[from=natoapp6c unknown land]{lower}
17430 \inheritanchor[from=natoapp6c unknown land]{left}
17431 \inheritanchor[from=natoapp6c unknown land]{right}
17432 \inheritanchor[from=natoapp6c unknown land]{center}
17433 \inheritbackgroundpath[from=natoapp6c unknown land]
17434 \inheritbehindforegroundpath[from=natoapp6c unknown land]
17435 }

```



The unknown space command. Similar to air command, but with a top bar.

```

17436 \pgfdeclareshape{natoapp6c unknown space}{%
17437 \inheritsavedanchors[from=natoapp6c unknown air]
17438 \inheritanchor[from=natoapp6c unknown air]{inner north east}
17439 \inheritanchor[from=natoapp6c unknown air]{inner north west}
17440 \inheritanchor[from=natoapp6c unknown air]{inner south west}
17441 \inheritanchor[from=natoapp6c unknown air]{inner south east}
17442 \inheritanchor[from=natoapp6c unknown air]{north east}
17443 \inheritanchor[from=natoapp6c unknown air]{north west}
17444 \inheritanchor[from=natoapp6c unknown air]{south east}
17445 \inheritanchor[from=natoapp6c unknown air]{south west}
17446 \inheritanchor[from=natoapp6c unknown air]{north}
17447 \inheritanchor[from=natoapp6c unknown air]{west}
17448 \inheritanchor[from=natoapp6c unknown air]{east}
17449 \inheritanchor[from=natoapp6c unknown air]{south}
17450 \inheritanchor[from=natoapp6c unknown air]{upper}
17451 \inheritanchor[from=natoapp6c unknown air]{lower}
17452 \inheritanchor[from=natoapp6c unknown air]{left}
17453 \inheritanchor[from=natoapp6c unknown air]{right}
17454 \inheritanchor[from=natoapp6c unknown air]{center}
17455 \inheritbackgroundpath[from=natoapp6c unknown air]
17456 \behindforegroundpath{%
17457 \n@to@pp@unknown@init
17458 \innernortheast \wg@tmpa=\pgf@x%
17459 \begin{n@to@pp@stroketo@fill}
17460 \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{-\wg@tmpa}}%
17461 \n@to@pp@unknown@right %
17462 \n@to@pp@unknown@top %
17463 \n@to@pp@unknown@left %
17464 \pgfusepath{stroke,clip}%
17465 %
17466 \northeast\wg@tmpa=\pgf@y\wg@tmpb=\pgf@y
17467 \advance\wg@tmpb-\n@to@pp@space@h
17468 %
17469 \pgfpathmoveto{\pgfqpoint{ \radius}{\wg@tmpa}}%
17470 \pgfpathlineto{\pgfqpoint{-\radius}{\wg@tmpa}}%
17471 \pgfpathlineto{\pgfqpoint{-\radius}{\wg@tmpb}}%

```

```

17472 \pgfpathlineto{\pgfqpoint{ \radius}{\wg@tmpb}}%
17473 \pgfclosepath%
17474 \pgfusepath{fill}%
17475 \end{n@to@pp@stroketofill}
17476 }
17477 }

```



The unknown sub surface command.

```

17478 \pgfdeclareshape{natoapp6c unknown sub surface}{%
17479 \inheritssavedanchors[from=natoapp6c unknown land]
17480 \inheritanchor[from=natoapp6c unknown land]{inner north east}
17481 \inheritanchor[from=natoapp6c unknown land]{inner north west}
17482 \inheritanchor[from=natoapp6c unknown land]{inner south west}
17483 \inheritanchor[from=natoapp6c unknown land]{inner south east}
17484 \inheritanchor[from=natoapp6c unknown land]{south east}
17485 \inheritanchor[from=natoapp6c unknown land]{south west}
17486 \inheritanchor[from=natoapp6c unknown land]{south}
17487 \inheritanchor[from=natoapp6c unknown land]{west}
17488 \inheritanchor[from=natoapp6c unknown land]{east}
17489 \inheritanchor[from=natoapp6c unknown land]{upper}
17490 \inheritanchor[from=natoapp6c unknown land]{lower}
17491 \inheritanchor[from=natoapp6c unknown land]{left}
17492 \inheritanchor[from=natoapp6c unknown land]{right}
17493 \inheritanchor[from=natoapp6c unknown land]{center}
17494 \anchor{north}{\innernortheast\pgf@x=0cm}
17495 \anchor{north east}{
17496 \northeast\wg@tmpa=\pgf@x
17497 \innernortheast\pgf@y=\pgf@y
17498 \pgf@x=\wg@tmpa}
17499 \anchor{north west}{
17500 \northeast\wg@tmpa=\pgf@x
17501 \innernortheast\pgf@y=\pgf@y
17502 \pgf@x=-\wg@tmpa}
17503 \backgroundpath{%
17504 \n@to@pp@unknown@init
17505 \innernortheast \wg@tmpa=\pgf@x%
17506 \pgfpathmoveto{\pgfqpoint{-\wg@tmpa}{\wg@tmpa}}%
17507 \n@to@pp@unknown@left %
17508 \n@to@pp@unknown@bottom %
17509 \n@to@pp@unknown@right %
17510 \ifn@to@pp@isclip
17511 \pgfpathlineto{\pgfqpoint{0cm}{\radius}}
17512 \pgfpathclose
17513 \fi
17514 }
17515 \behindforegroundpath{%
17516 \n@to@pp@unknown@init
17517 \innernortheast \wg@tmpa=\pgf@x%

```

```

17518 \pgfpathmoveto{\pgfqpoint{-\wg@tmpa}{\wg@tmpa}}%
17519 \n@to@pp@unknown@left %
17520 \n@to@pp@unknown@bottom %
17521 \n@to@pp@unknown@right %
17522 \pgfusepath{stroke}
17523 }

```



The unknown dismounted command. Same as land command.

```

17524 \pgfdeclareshape{natoapp6c unknown dismounted}{%
17525 \inheritshadedanchors[from=natoapp6c unknown land]
17526 \inheritanchor[from=natoapp6c unknown land]{inner north east}
17527 \inheritanchor[from=natoapp6c unknown land]{inner north west}
17528 \inheritanchor[from=natoapp6c unknown land]{inner south west}
17529 \inheritanchor[from=natoapp6c unknown land]{inner south east}
17530 \inheritanchor[from=natoapp6c unknown land]{north east}
17531 \inheritanchor[from=natoapp6c unknown land]{north west}
17532 \inheritanchor[from=natoapp6c unknown land]{south east}
17533 \inheritanchor[from=natoapp6c unknown land]{south west}
17534 \inheritanchor[from=natoapp6c unknown land]{north}
17535 \inheritanchor[from=natoapp6c unknown land]{west}
17536 \inheritanchor[from=natoapp6c unknown land]{east}
17537 \inheritanchor[from=natoapp6c unknown land]{south}
17538 \inheritanchor[from=natoapp6c unknown land]{upper}
17539 \inheritanchor[from=natoapp6c unknown land]{lower}
17540 \inheritanchor[from=natoapp6c unknown land]{left}
17541 \inheritanchor[from=natoapp6c unknown land]{right}
17542 \inheritanchor[from=natoapp6c unknown land]{center}
17543 \inheritbackgroundpath[from=natoapp6c unknown land]
17544 \inheritbehindforegroundpath[from=natoapp6c unknown land]
17545 }

```

5.6.11 Echelons

Dimensions

```

17546 \def\n@to@pp@e@y{.12}
17547 \def\n@to@pp@e@yy{.24}

```

Paths as macros

```

17548 \def\n@to@pp@e@d#1{(#1*\n@to@pp@e@y,0)$ circle(0.09)}
17549 \def\n@to@pp@e@b#1{%
17550 $(#1*\n@to@pp@e@y,-\n@to@pp@e@y)$ -- $(#1*\n@to@pp@e@y,\n@to@pp@e@y)$}
17551 \def\n@to@pp@e@x#1{%
17552 $(-\n@to@pp@e@y,-\n@to@pp@e@y)+(#1*\n@to@pp@e@y,0)$--
17553 ++(\n@to@pp@e@y,\n@to@pp@e@yy)

```

```

17554 ($(-\n@to@pp@e@y, \n@to@pp@e@y)+(#1*\n@to@pp@e@y,0)$)--
17555 ++(\n@to@pp@e@yy,-\n@to@pp@e@yy)}

```

Pictures

```

17556 \tikzset{
17557   pics/natoapp6c/s/echelon/.is choice,
17558   pics/natoapp6c/s/echelon/squad/.style={code={
17559     \path[draw,fill=pgfstrokecolor,pic actions]
17560     \foreach \o in {0}{\n@to@pp@e@d{\o}};}},
17561   pics/natoapp6c/s/echelon/section/.style={code={
17562     \path[draw,fill=pgfstrokecolor,pic actions]
17563     \foreach \o in {-1,1}{\n@to@pp@e@d{\o}};}},
17564   pics/natoapp6c/s/echelon/platoon/.style={code={
17565     \path[draw,fill=pgfstrokecolor,pic actions]
17566     \foreach \o in {-2,0,2}{\n@to@pp@e@d{\o}};}},
17567   pics/natoapp6c/s/echelon/company/.style={code={
17568     \path[draw,pic actions]
17569     \foreach \o in {0}{\n@to@pp@e@b{\o}};}},
17570   pics/natoapp6c/s/echelon/battalion/.style={code={
17571     \path[draw,pic actions]
17572     \foreach \o in {-1,1}{\n@to@pp@e@b{\o}};}},
17573   pics/natoapp6c/s/echelon/regiment/.style={code={
17574     \path[draw,pic actions]
17575     \foreach \o in {-2,0,2}{\n@to@pp@e@b{\o}};}},
17576   pics/natoapp6c/s/echelon/brigade/.style={code={
17577     \path[draw,pic actions]
17578     \foreach \o in {0}{\n@to@pp@e@x{\o}};}},
17579   pics/natoapp6c/s/echelon/division/.style={code={
17580     \path[draw,pic actions]
17581     \foreach \o in {-1,1}{\n@to@pp@e@x{\o}};}},
17582   pics/natoapp6c/s/echelon/corps/.style={code={
17583     \path[draw,pic actions]
17584     \foreach \o in {-2,0,2}{\n@to@pp@e@x{\o}};}},
17585   pics/natoapp6c/s/echelon/army/.style={code={
17586     \path[draw,pic actions]
17587     \foreach \o in {-3,-1,1,3}{\n@to@pp@e@x{\o}};}},
17588   pics/natoapp6c/s/echelon/army group/.style={code={
17589     \path[draw,pic actions]
17590     \foreach \o in {-4,-2,0,2,4}{\n@to@pp@e@x{\o}};}},
17591   pics/natoapp6c/s/echelon/theatre/.style={code={
17592     \path[draw,pic actions]
17593     \foreach \o in {-5,-3,-1,1,3,5}{\n@to@pp@e@x{\o}};}},
17594   pics/natoapp6c/s/echelon/command/.style={code={
17595     \path[draw,pic actions]
17596     (-.3,-.1) -- (-.3,.1) (-.4, 0) -- (-.2, 0)
17597     (.3,-.1) -- (.3,.1) (.4, 0) -- (.2, 0)};}},
17598   pics/natoapp6c/s/echelon/dummy/.style={code={%
17599     \path[draw,pic actions] (M.north west) rectangle
17600     ($(M.north east)+(0,.1)$)};}},
17601 }

```

5.6.12 Text on symbols

```
/tikz/natoapp6c/normal text
/tikz/natoapp6c/squashed text
/tikz/natoapp6c/small text
/tikz/natoapp6c/small squashed text
```

NATO App6 does not specify any particular font for text symbols (main, modifiers, or amplifiers) but here we choose to use \TeX Gyro Heros (a Gothic font, i.e., Helvetica-like).

```
17602 \newcommand\n@to@ppfont[2][b]{%
17603   \fontencoding{T1}\fontfamily{qhv}\fontseries{#1}\fontsize{#2}{0}\selectfont}
17604 \tikzset{%
17605   natoapp6c/text/.style={%
17606     shape=rectangle,%
17607     draw=none,%
17608     fill=none,%
17609     transform shape,%
17610     anchor=center},
17611   natoapp6c/normal text/.style={font=\n@to@ppfont{12}},
17612   natoapp6c/squashed text/.style={font=\n@to@ppfont[bc]{12}},
17613   natoapp6c/small text/.style={font=\n@to@ppfont{10}},
17614   natoapp6c/squashed small text/.style={font=\n@to@ppfont[bc]{10}},
17615 }
```

```
\n@to@pp@text@normal
\n@to@pp@text@squashed
\n@to@pp@text@small
\n@to@pp@text@smallsquashed
```

These macros are short-hands for making a node at (0,0) in the local scope.

```
17616 \newcommand\n@to@pp@text@normal[2] [] {%
17617   \node[natoapp6c/text,natoapp6c/normal text,#1]{#2}}
17618 \newcommand\n@to@pp@text@squashed[2] [] {%
17619   \node[natoapp6c/text,natoapp6c/squashed text,#1]{#2}}
17620 \newcommand\n@to@pp@text@small[2] [] {%
17621   \node[natoapp6c/text,natoapp6c/small text,#1]{#2}}
17622 \newcommand\n@to@pp@text@smallsquashed[2] [] {%
17623   \node[natoapp6c/text,natoapp6c/squashed small text,#1]{#2}}
```

5.6.13 Text natoapp6c namespace

```
/natoapp6c
```

Here, we set up the key path /natoapp6c

```
17624 \def\natoapp@report{}
17625 \tikzset{
17626   /natoapp6c/.search also={/tikz},
17627   /natoapp6c/.cd,
```

```
17628 }
```

Choices of faction, command, and echelon

```
natoapp6c/id  
natoapp6c/fac  
natoapp6c/cmd  
natoapp6c/ech
```

The keys `id`, `specfac`, `cmd`, and `ech` are internal keys used to store the choice of faction, command, and echelon, respectively, in.

```
17629 \tikzset{  
17630 /natoapp6c/.cd,  
17631 id/.store in=\natoapp@id,  
17632 fac/.store in=\natoapp@fac,  
17633 cmd/.store in=\natoapp@cmd,  
17634 ech/.store in=\natoapp@ech,  
17635 path/.store in=\natoapp@th  
17636 }
```

```
natoapp6c/faction
```

Choice of *⟨faction⟩*. This is limited to predefined values. The choice is stored in the key `natoapp6c/fac`.

```
17637 \tikzset{  
17638 /natoapp6c/.cd,  
17639 faction/.is choice,  
17640 faction/none/.code={\let\natoapp@fac\undefined},  
17641 faction/friendly/.style={fac=friendly},  
17642 faction/friend/.style={fac=friendly},  
17643 faction/hostile/.style={fac=hostile},  
17644 faction/enemy/.style={fac=hostile},  
17645 faction/neutral/.style={fac=neutral},  
17646 faction/unknown/.style={fac=unknown},  
17647 faction/?/.style={fac=unknown},  
17648 faction/.initial=friendly,  
17649 }
```

```
natoapp6c/command
```

Choice of *⟨command⟩*. This is limited to predefined values. The choice is stored in the key `natoapp6c/cmd`.

```
17650 \tikzset{  
17651 /natoapp6c/.cd,  
17652 command/.is choice,  
17653 command/base/.style={cmd=base},  
17654 command/activity/.style={cmd=activity},  
17655 command/air/.style={cmd=air},  
17656 command/missile/.style={cmd=air},  
17657 command/equipment/.style={cmd=equipment},
```

```

17658 command/installation/.style={cmd=installation},
17659 command/land/.style={cmd=land},
17660 command/sea surface/.style={cmd=sea surface},
17661 command/space/.style={cmd=space},
17662 command/sub surface/.style={cmd=sub surface},
17663 command/sea mine/.style={cmd=sub surface},
17664 command/dismounted/.style={cmd=dismounted},
17665 command/none/.style={cmd=none},
17666 }

```

natoapp6c/echolon

Unit size. The choice is limited to one of the below. The choice is stored in the key natoapp6c/ech.

```

17667 \tikzset{
17668 /natoapp6c/.cd,
17669 echolon/.is choice,
17670 echolon/none/.style={ech=},
17671 echolon/team/.style={ech=},
17672 echolon/squad/.style={ech=squad},
17673 echolon/section/.style={ech=section},
17674 echolon/platoon/.style={ech=platoon},
17675 echolon/company/.style={ech=company},
17676 echolon/battalion/.style={ech=battalion},
17677 echolon/regiment/.style={ech=regiment},
17678 echolon/brigade/.style={ech=brigade},
17679 echolon/division/.style={ech=division},
17680 echolon/corps/.style={ech=corps},
17681 echolon/army/.style={ech=army},
17682 echolon/army group/.style={ech=army group},
17683 echolon/theatre/.style={ech=theatre},
17684 echolon/command/.style={ech=command},
17685 echolon/dummy/.style={ech=dummy},
17686 }

```

```

natoapp6c/main
natoapp6c/left
natoapp6c/right
natoapp6c/top
natoapp6c/bottom
natoapp6c/below
natoapp6c/frame

```

```

\natoapp@main
\natoapp@left
\natoapp@right
\natoapp@upper
\natoapp@lower
\natoapp@below

```

The various parts of the symbols. The keys `upper` and `lower` are aliases for `top` and `bottom`, respectively. The choices are stored in macros

```

17687 \newif\ifnatoapp@decoy\natoapp@decoyfalse
17688 \tikzset{
17689   /natoapp6c/.cd,
17690   main/.store in=\natoapp@main,   main/.initial=,%
17691   left/.store in=\natoapp@left,   left/.initial=,%
17692   right/.store in=\natoapp@right, right/.initial=,%
17693   upper/.store in=\natoapp@upper, upper/.initial=,%
17694   lower/.store in=\natoapp@lower, lower/.initial=,%
17695   top/.store in=\natoapp@upper,%
17696   bottom/.store in=\natoapp@lower,%
17697   below/.store in=\natoapp@below, below/.initial=,%
17698   frame/.store in=\natoapp@frame, frame/.initial=,%
17699   decoy/.is if=natoapp@decoy,%
17700 }

```

```

/tikz/natoapp6c/main
/tikz/natoapp6c/modifiers
/tikz/natoapp6c/lower
/tikz/natoapp6c/upper
/tikz/natoapp6c/left
/tikz/natoapp6c/right
/tikz/natoapp6c/echelon
/tikz/natoapp6c/below

```

Styles used by the various parts of the symbol.

```

17701 \tikzset{
17702   natoapp6c/parts/.style={
17703     scale line widths,
17704     draw,
17705     shape=rectangle,
17706     transform shape},
17707   natoapp6c/main/.style={natoapp6c/parts},
17708   natoapp6c/modifiers/.style={natoapp6c/parts,scale=.6},
17709   natoapp6c/lower/.style={natoapp6c/parts},
17710   natoapp6c/upper/.style={natoapp6c/parts},
17711   natoapp6c/left/.style={natoapp6c/parts},
17712   natoapp6c/right/.style={natoapp6c/parts},
17713   natoapp6c/echelon/.style={natoapp6c/parts},
17714   natoapp6c/below/.style={natoapp6c/parts}
17715 }

```

5.6.14 The `natoapp6c` styles

```

/tikz/natoapp6c

```

This key sets up a node to make a NATO App6(c) symbol. The key takes a single argument which in turn must contain key–value pairs in the `/natoapp6c` (or `/tikz`) namespace(s). We set the `shape` parameter of the node, and

calls the passed keys in the /natoapp6c namespace to set-up elements of the chit.

```
17716 \tikzset{%
17717   natoapp6c/.code={%
17718     \pgfkeys{/tikz/transform shape,/tikz/shape=natoapp6c}
17719     \pgfkeys{/natoapp6c/.cd,path=natoapp6c/s/,#1}}
```

We define a counter to set-up unique names for symbol nodes.

```
17720 \newcounter{natoappid}\setcounter{natoappid}{0}
```

5.6.15 The \natoapp6c shape

```
\ifn@to@pp@below
\ifn@to@pp@mod
```

We define an \if to allow us to detect if something is rendered below the frame

```
17721 \newif\ifn@to@pp@below\n@to@pp@belowfalse%
17722 \newif\ifn@to@pp@mod\n@to@pp@modfalse%
```



natoapp6c

Next, we define the mother shape of NATO App6(c) nodes. This is a composite node with sub-nodes for the various parts (including the frame) of the symbol.

It is quite complex so we will go through the implementation in bits.

First, we make some saved anchors (the centre) and macros (identifier, frame type, and frame options).

```
17723 % \def\wg@n@to@p@th{}
17724 \pgfdeclareshape{natoapp6c}{%
17725   \savedanchor\center{\pgf@x=0cm\pgf@y=0cm}
17726   \savedmacro{id{%
17727     \n@to@pp@dbg{3}{NATO App6(c) id (set): \meaning\natoapp@id}
17728     \@ifundefined{natoapp@id}{\let\natoapp@id\pgfutil@empty}{}%
17729     \ifx\natoapp@id\pgfutil@empty\relax%
17730       \wg@r@ndom@id%
17731       \edef{id{natoapp6c\wg@uuid}%
17732       \else%
17733         \edef{id{natoapp@id}%
17734       \fi%
17735     \n@to@pp@dbg{3}{NATO App6(c) id: \meaning{id}}
17736   \savedmacro\frameshape{%
17737     \let\frameshape\pgfutil@empty%
17738     \@ifundefined{natoapp@cmd}{\def\frameshape{base}}{%
17739       \edef\frameshape{natoapp@cmd}
17740     \@ifundefined{natoapp@fac}{\def\frameshape{base}}{%
17741       \edef\frameshape{natoapp@fac\space\frameshape}}
17742     \n@to@pp@dbg{3}{NATO App6(c) frame shape: \meaning\frameshape}}
17743   \savedmacro\frameopt{%
```

```

17744 \let\frameopt\pgfutil@empty%
17745 \@ifundefined{natoapp@frame}{%
17746 \edef\frameopt{\natoapp@frame}}
17747 \n@to@pp@dbg{3}{NATO App6(c) Frame options: \meaning\frameopt}%
17748 }
17749 \savedmacro\thisname{\def\thisname{natoapp6c}}

```

Then we define a number of regular anchors

```

17750 \anchor{center} {\center}

```

The remaining anchors depend on the shape being used. We reference the anchors of the embedded node of the frame.

```

17751 \anchor{north east}{\wg@sub@nchor{M\id}{north east}}
17752 \anchor{north west}{\wg@sub@nchor{M\id}{north west}}
17753 \anchor{south east}{\wg@sub@nchor{M\id}{south east}}
17754 \anchor{south west}{\wg@sub@nchor{M\id}{south west}}
17755 \anchor{north} {\wg@sub@nchor{M\id}{north}}
17756 \anchor{west} {\wg@sub@nchor{M\id}{west}}
17757 \anchor{south} {\wg@sub@nchor{M\id}{south}}
17758 \anchor{east} {\wg@sub@nchor{M\id}{east}}
17759 \anchor{upper} {\wg@sub@nchor{M\id}{upper}}
17760 \anchor{lower} {\wg@sub@nchor{M\id}{lower}}
17761 \anchor{left} {\wg@sub@nchor{M\id}{left}}
17762 \anchor{right} {\wg@sub@nchor{M\id}{right}}

```

The next two anchors are a little funny.

```

17763 \anchor{echelon} {%
17764 \wg@sub@nchor{M}{north}%
17765 \wg@tmpa\pgflinewidth% by 1.5%
17766 %\wg@getscale%
17767 %\pgfmathparse{ifthenelse(\wg@scale>0.00001,\wg@tmpa/\wg@scale,\wg@tmpa)}
17768 %\edef\wg@a{\pgfmathresult}\pgfmathsetlength{\wg@tmpa}{\wg@a pt}
17769 %\n@to@pp@dbg{0}{Scale is '\wg@scale' -> '\the\wg@tmpa'}%
17770 %\divide\wg@tmpa by \wg@scale%
17771 \advance\wg@tmpa by\n@to@pp@e@y cm%
17772 \advance\pgf@y\wg@tmpa%
17773 }
17774 \anchor{below} {%
17775 \n@to@pp@dbg{3}{NATO App6(c) get below anchor}%
17776 \wg@sub@nchor{M}{south}%
17777 \wg@tmpa=\n@to@pp@e@yy cm%
17778 \advance\wg@tmpa-\pgflinewidth% by 1.5%
17779 \advance\pgf@y-\wg@tmpa%
17780 }

```

All right, so time to make the actual frame. Note that we do this in a ‘behind’ path so we can actually draw stuff. First, we flag that we’re not in a modifier, nor in the ‘below’ part.

```

17781 \behindbackgroundpath{%
17782 \wg@ignore@sub@nchortrue%
17783 \n@to@pp@dbg{3}{NATO App6(c) Before print}
17784 \n@to@pp@dbg{3}{NATO App6(c) background path: \meaning\id
17785 ^^J ID: \meaning\natoapp@id

```

```

17786    ^^J Faction: \meaning\natoapp@fac
17787    ^^J Command: \meaning\natoapp@cmd
17788    ^^J Echelon: \meaning\natoapp@ech
17789    ^^J Main: \meaning\natoapp@main
17790    ^^J Left: \meaning\natoapp@left
17791    ^^J Right: \meaning\natoapp@right
17792    ^^J Upper: \meaning\natoapp@upper
17793    ^^J Lower: \meaning\natoapp@lower
17794    ^^J Below: \meaning\natoapp@below
17795    ^^J Shape: \meaning\frameshape
17796    ^^J Options: \meaning\frameopt}
17797    \natoapp@report
17798    \n@to@pp@modfalse
17799    \n@to@pp@belowfalse

```

If the symbol is empty, then do nothing.

```

17800    \ifx\frameshape\pgfutil@empty%
17801    \n@to@pp@dbg{2}{NATO App6(c) has no frame!}
17802    \else

```

We start a scope because we want to do some clipping here. Then, we use the frame to clip the remaining part. Note that we do this via a node which we give the identifier M. Various elements of the symbol can then refer to this shape to define paths, etc.

```

17803    \begin{scope}
17804        \pgfinterruptboundingbox
17805        %% Clip to shape in scope
17806        %% \message{^^JClipping to NATO App6(c) shape}
17807        \n@to@pp@iscliptrue%
17808        \n@to@pp@dbg{1}{NATO App6(c) frame node M (clip)}
17809        \pgfnode{natoapp6c \frameshape}{center}{-}{M}{\pgfusepath{clip}}
17810        \n@to@pp@isclipfalse%

```

Next, we should see if we need to fill the frame. We do that by expanding the passed `frame` key-values in a scope, and *then* get the fill colour.

```

17811        %% Start new scope including frame key options
17812        \edef\tmp@opt{[\frameopt]}
17813        \expandafter\scope\tmp@opt
17814        % Get fill color {possibly from frame key}
17815        \expandafter\let\expandafter\tmp@fill%
17816        \csname\string\color@pgffillcolor\endcsname%

```

If the fill colour is not `\relax`, then we fill the frame. Note that this is done in the background, so when we draw in the foreground we will render on top of the fill.

```

17817        % Check if we need to fill shape (fill colour us not \relax)
17818        \ifx\tmp@fill\relax\else%
17819        \n@to@pp@dbg{2}{NATO App6(c) frame fill}
17820        \pgfnode{natoapp6c \frameshape}{center}{-}{-}{\pgfusepath{fill}}%
17821        \fi%
17822        % End the fill scope
17823        \endscope%

```

Now we need to render some of the elements of the symbol. We start with the main elements. We can specify many main elements (to make composite symbols).

```

17824      % Render mains
17825      \@ifundefined{natoapp@main}{}{
17826        \n@to@pp@dbg{1}{NATO App6(c) mains: \meaning\natoapp@main}
17827        \begin{scope}[natoapp6c/main]
17828          \n@to@pp@dbg{1}{NATO symbol path '\n@to@pp@th'}
17829          \wg@pic@all{\natoapp@main}{\n@to@pp@th}{M.center}{natoapp6c/main}%
17830        \end{scope}}%
17831      % Modifiers flagged

```

The next thing is to render the various modifiers. We start by flagging this globally.

```

17832      \n@to@pp@modtrue
17833      \n@to@pp@dbg{2}{NATO App6(c) modifiers}

```

Below we render the lower, upper, left, and right elements. This is all done in the same way. Note that the elements positions are dictated by anchors of the frame shape (via shape identifier M).

```

17834      % Render lowers
17835      \@ifundefined{natoapp@lower}{}{%
17836        \begin{scope}%
17837          \wg@pic@all{\natoapp@lower}{natoapp6c/s/}{M.lower}{%
17838            natoapp6c/modifiers,natoapp6c/lowe}%
17839        \end{scope}}%
17840      % Render uppers
17841      \@ifundefined{natoapp@upper}{}{%
17842        \begin{scope}[]
17843          \wg@pic@all{\natoapp@upper}{natoapp6c/s/}{M.upper}{%
17844            natoapp6c/modifiers,natoapp6c/upper}%
17845        \end{scope}}%
17846      % Render lefts
17847      \@ifundefined{natoapp@left}{}{%
17848        \begin{scope}[]
17849          \wg@pic@all{\natoapp@left}{natoapp6c/s/}{M.left}{%
17850            natoapp6c/modifiers,natoapp6c/left}%
17851        \end{scope}}%
17852      % Render rights
17853      \@ifundefined{natoapp@right}{}{%
17854        \begin{scope}[]
17855          \wg@pic@all{\natoapp@right}{natoapp6c/s/}{M.right}{%
17856            natoapp6c/modifiers,natoapp6c/right}%
17857        \end{scope}}%
17858      % Modifiers end
17859      \n@to@pp@modfalse%
17860      \endpgfinterruptboundingbox
17861    \end{scope}}%
17862    \fi%
17863    \wg@ignore@sub@anchorfalse%
17864  }

```

That concludes rendering most of the symbol. We have not put in the echelon, below element, or drawn the frame yet. That we will do on the foreground path.

In the foreground ‘behind’ path we render the echelon, below element, and draw the frame.

```

17865 \behindforegroundpath{%
17866   \wg@ignore@sub@anchortrue%
17867   \n@to@pp@dbg{2}{NATO App6(c) foreground path: ‘\meaning{id’
17868     ^^J Echelon: \meaning{natoapp@ech
17869     ^^J Symbol: \meaning\frameshape
17870     ^^J Below: \meaning{natoapp@below
17871     ^^J Frame: \meaning\frameopt}
17872   %
17873   %

```

We check if we have a frame. If not, stop.

```

17874 \ifx\frameshape\pgfutil@empty%
17875   \n@to@pp@dbg{2}{NATO App6(c) has no frame shape!}%
17876 \else%

```

We want to draw the rest of the symbol as a part of the frame, so we expand the `frame` options in a scope.

```

17877 \edef\tmp@opt{[\frameopt]}
17878 \expandafter\scope\tmp@opt

```

First thing in this scope is to draw the actual frame. Again, this is done via a node with the right shape. Note that we label this node as $M\langle id \rangle$ so we way refer to it later on.

```

17879 \edef\mid{M{id}}
17880 \n@to@pp@dbg{1}{NATO App6(c) inner node ‘M{id’ ===}
17881 \pgfnode{natoapp6c \frameshape}{center}{\mid}{\pgfusepath{stroke}}
17882 \wg@ignore@sub@anchorfalse%

```

If the user gave an echelon, then put that in. Note that echelons are limited to predefined values.

```

17883 % Put in the echelon
17884 \n@to@pp@dbg{2}{Echelon}
17885 \@ifundefined{natoapp@ech}{\%
17886   \ifx\natoapp@ech\pgfutil@empty\else%
17887     \def\args{echelon=\natoapp@ech}
17888     \n@to@pp@dbg{3}{Make the echelon}%
17889     \wg@anchor{\thisname}{echelon}%
17890     \expandafter\wg@pic\args\@endwg@pic%
17891     {natoapp6c/s/}{\pgf@x,\pgf@y}{natoapp6c/echelon}
17892   \fi%
17893 }

```

If the user want something under the frame, put that in.

```

17894 % Put in stuff below main
17895 \n@to@pp@dbg{2}{Below}
17896 \@ifundefined{natoapp@below}{\%
17897   \n@to@pp@belowtrue
17898   \begin{scope}
17899     \n@to@pp@dbg{3}{Make below}%
17900     \wg@anchor{\thisname}{below}%
17901     \wg@pic@all{\natoapp@below}{natoapp6c/s/}{\pgf@x,\pgf@y}{\%

```

```

17902         natoapp6c/below}%
17903     \end{scope}%
17904     \n@to@pp@belowfalse}

```

If the `decoy` flag was set, we draw that.

```

17905     \n@to@pp@dbg{2}{Decoy}
17906     \ifnatoapp@decoy%
17907         \scope[dash pattern=on 3\pgflinewidth off 2\pgflinewidth]%
17908         \n@to@pp@dbg{1}{Drawing decoy modifier}%
17909         \wg@sub@nchor{M{id}}{north east}
17910         \wg@tmpa=\pgf@x%
17911         \wg@tmpb=\pgf@y%
17912         \pgfpathmoveto{\pgfqpoint{\wg@tmpa}{\wg@tmpb}}%
17913         \wg@tmpc=\n@to@pp@e@yy cm%
17914         \advance\wg@tmpc\n@to@pp@e@yy cm%
17915         \advance\wg@tmpc\wg@tmpb%
17916         \pgfpathlineto{\pgfqpoint{0cm}{\wg@tmpc}}%
17917         \pgfpathlineto{\pgfqpoint{-\wg@tmpa}{\wg@tmpb}}%
17918         \pgfusepath{stroke}%
17919         \endscope%
17920     \fi%
17921     \endscope%
17922 \fi%
17923 \wg@ignore@sub@nchorfalse%
17924 }
17925 }

```

That finished the shape for NATO App6(c) symbols. We could stop here, but for convenience we define a wrapper macro.

5.6.16 The `\natoapp` wrapper macro

`\natoapp`

This is a wrapper macro for inserting a node with a NATO App6(c) symbol in it. The syntax of the macro is

```
\natoapp[<natoapp6c options>](<position>)(<identifier>);
```

Note that the trailing semi-colon (;) is optional.

This macro forwards to `\n@toapp`.

```

17926 \newcommand\natoapp[1] [] {%
17927     \n@to@pp@dbg{2}{NATO App6(c) macro -> '#1'}
17928     \tikzset{/natoapp6c/.cd,faction=friendly,command=land}%
17929     \@ifnextchar({\n@toapp{#1}}{\n@toapp{#1}(0,0)}%)
17930 }

```

`\n@toapp`

This macro takes care to parse the location argument — if any. It forwards to `\n@to@pp`.

```

17931 \def\n@toapp#1(#2){%
17932   \n@to@pp@dbg{2}{NATO App6(c) second macro -> '#1', '#2'}
17933   \@ifnextchar({\n@to@pp{#1}{#2}}{\n@to@pp{#1}{#2}()}%)
17934 }

```

\n@to@pp

This is the main work-horse of the wrapper. It makes a node with the shape `natoapp6c` passing the relevant parameters. The syntax of the macro is

```

17935 \def\n@to@pp#1#2(#3){%
17936   \node[draw,transform shape,natoapp6c={#1}] (#3) at (#2) {};%
17937   \@ifnextchar;{\@gobble{}}

```

5.6.17 Kriegspiel-like symbols

Style that selects Kriegspiel-like symbols by setting the symbols picture path.

```

17938 \tikzset{
17939   kriegspiel symbol/.code={
17940     \pgfkeys{%
17941       /tikz/transform shape,%
17942       /tikz/shape=kriegspiel symbol}
17943     \n@to@pp@dbg{10}{Args for symbol '#1'}
17944     \pgfkeys{/natoapp6c/.cd,%
17945       path=kriegspiel/s/,%
17946       #1}
17947   }
17948 }

```

Shape of Kriegspiel-like symbols (always the same). This mainly inherits from the NATO shape. This hard-codes the frame shape to be `kriegspiel` (`shape natoapp6c kriegspiel`).

```

17949 \pgfdeclareshape{kriegspiel symbol}{
17950   \inheritsavedanchors[from=natoapp6c]
17951   \savedmacro\frameshape{%
17952     \def\frameshape{kriegspiel}}
17953   \inheritanchor[from=natoapp6c]{center}
17954   \inheritanchor[from=natoapp6c]{north east}
17955   \inheritanchor[from=natoapp6c]{north west}
17956   \inheritanchor[from=natoapp6c]{south east}
17957   \inheritanchor[from=natoapp6c]{south west}
17958   \inheritanchor[from=natoapp6c]{north}
17959   \inheritanchor[from=natoapp6c]{west}
17960   \inheritanchor[from=natoapp6c]{south}
17961   \inheritanchor[from=natoapp6c]{east}
17962   \inheritanchor[from=natoapp6c]{upper}
17963   \inheritanchor[from=natoapp6c]{lower}
17964   \inheritanchor[from=natoapp6c]{left}
17965   \inheritanchor[from=natoapp6c]{right}
17966   \anchor{echelon} {}
17967   \wg@sub@nchor{M\id}{north west}%

```

```

17968 \wg@tmpa=\n@to@pp@e@y cm%
17969 \divide\wg@tmpa by 2%
17970 \advance\pgf@y\wg@tmpa%
17971 }%
17972 \inheritbackgroundpath[from=natoapp6c]
17973 \inheritbehindforegroundpath[from=natoapp6c]
17974 \inheritbehindbackgroundpath[from=natoapp6c]
17975 \savedmacro\thisname{\def\thisname{kriegspiel symbol}}
17976 }

```

The shape of a Kriegspiel-like frame. Always the same. This never draws the background path.

```

17977 \pgfdeclareshape{natoapp6c kriegspiel}{
17978 \inheritsavedanchors[from=rectangle]
17979 \inheritbackgroundpath[from=rectangle]
17980 \savedanchor\northeast{\pgf@x=1.4cm\pgf@y=.3125cm}
17981 \savedanchor\southwest{\pgf@x=-1.4cm\pgf@y=-.3125cm}
17982 \inheritanchor[from=rectangle]{center}
17983 \inheritanchor[from=rectangle]{north east}
17984 \inheritanchor[from=rectangle]{north west}
17985 \inheritanchor[from=rectangle]{south east}
17986 \inheritanchor[from=rectangle]{south west}
17987 \inheritanchor[from=rectangle]{north}
17988 \inheritanchor[from=rectangle]{west}
17989 \inheritanchor[from=rectangle]{south}
17990 \inheritanchor[from=rectangle]{east}
17991 \backgroundpath{}
17992 }

```

Now some symbols. We do not define a whole lot, since we do not need that for Kriegspiel-like counters.

```

17993 \tikzset{
17994 ks debug frame/.style={
17995 draw=none,
17996 %draw=magenta,
17997 %dashed,
17998 },
17999 kriegspiel/s/infantry/.pic={
18000 \coordinate(a) at (M.south west);
18001 \coordinate(b) at ($(M.north east)+(0,-.2)$);
18002 \@ifundefinedcolor{pgffillcolor}{\{
18003 \path[fill=pgffillcolor](a)rectangle(b);}
18004 \path[pic actions,fill=none](a)rectangle(b);
18005 \path[pic actions,fill=none](a)--(b);
18006 \path[pic actions,fill=none] let
18007 \p1=(a),\p2=(b) in (\x2,\y1)--(\x1,\y2);
18008 \path[fill=pgfstrokecolor] let
18009 \p2=(b) in (-.05,\y2)rectangle++(.1,.2);
18010 \draw[ks debug frame](M.south west)rectangle(M.north east);
18011 },
18012 kriegspiel/s/reconnaissance/.pic={
18013 \coordinate(a) at (M.south west);
18014 \coordinate(b) at ($(M.north east)+(0,-.2)$);
18015 \@ifundefinedcolor{pgffillcolor}{\{

```

```

18016     \path[fill=pgffillcolor](a)rectangle(b);}
18017     \path[pic actions,fill=none](a)rectangle(b);
18018     \path[fill=pgfstrokecolor](a)--(b)--(a|b)--cycle;
18019     \path[fill=pgfstrokecolor] let
18020     \p2=(b) in
18021     (-.05,\y2)---+(0,.2)---+(-10:.4)---+(-170:.3)--(.05,\y2)--cycle;
18022     \draw[ks debug frame](M.south west)rectangle(M.north east);
18023 },
18024 kriegspiel/s/artillery/.pic={
18025     \coordinate(a) at (M.south west);
18026     \coordinate(b) at ($(M.north east)+(0,-.5)$);
18027     \@ifundefinedcolor{pgffillcolor}{}{
18028     \path[fill=pgffillcolor](a)rectangle(b);}
18029     \path[pic actions,fill=none](a)rectangle(b);
18030     \foreach \s in {-.8,0,.8}{
18031     \path[fill=pgfstrokecolor] let
18032     \p2=(b),%
18033     \n1={\y2+\pgflinewidth} in
18034     (\s-.04,\y2)rectangle++(.08,.5)
18035     ($(\s-.18,\n1)+(0,.05)$)rectangle++(.08,.2)
18036     ($(\s+.18,\n1)+(0,.05)$)rectangle++(-.08,.2);
18037     }
18038     \draw[ks debug frame](M.south west)rectangle(M.north east);
18039 },
18040 kriegspiel/s/reconnaissance artillery/.pic={
18041     \coordinate(a) at (M.south west);
18042     \coordinate(b) at ($(M.north east)+(0,-.5)$);
18043     \@ifundefinedcolor{pgffillcolor}{}{
18044     \path[fill=pgffillcolor](a)rectangle(b);}
18045     \path[pic actions,fill=none](a)rectangle(b);
18046     \path[fill=pgfstrokecolor](a)--(b)--(a|b)--cycle;
18047     \foreach \s in {-.8,0,.8}{
18048     \path[fill=pgfstrokecolor] let
18049     \p2=(b),%
18050     \n1={\y2+\pgflinewidth} in
18051     (\s-.04,\y2)rectangle++(.08,.5)
18052     ($(\s-.18,\n1)+(0,.05)$)rectangle++(.08,.2)
18053     ($(\s+.18,\n1)+(0,.05)$)rectangle++(-.08,.2);
18054     }
18055     \draw[ks debug frame](M.south west)rectangle(M.north east);
18056 }
18057 }
18058

```

5.6.18 Macros for markings

`\natoappmark`

A macro for making NATO App6(c) markings.

```

18059 \providecommand\natoappmark[2] []{%
18060     \tikz[transform shape,
18061     scale=.25,

```

```

18062 baseline=(natoapp6c mark.south east),
18063 natoapp6c mark/.try,
18064 #1}{%1
18065 \node[draw,transform
18066 shape,natoapp6c={faction=friendly,command=land,
18067 main=#2}] (natoapp6c mark){}}
18068 % \natoapp[faction=friendly,command=land,main=#2](0,0)(natoapp6c mark)}}

```

`\echelonmark`

```

18069 \providecommand\echelonmark[2] [] {\tikz[transform shape,scale=.5,#1]{%
18070 \pic[scale line widths,line width=1pt] {natoapp6c/s/echelon=#2};}}

```

Some specific NATO App6(c) markers.

```

18071 \DeclareRobustCommand\armouredmark[1] [] {\natoappmark[#1]{armoured}}
18072 \DeclareRobustCommand\infantrymark[1] [] {\natoappmark[#1]{infantry}}
18073 \DeclareRobustCommand\artillerymark[1] [] {%
18074 \natoappmark[#1]{\pgfstrokecolor{artillery}}}
18075 \DeclareRobustCommand\combinedmark[1] [] {\natoappmark[#1]{combined arms}}
18076 \DeclareRobustCommand\pgmark[1] [] {\natoappmark[#1]{\armoured,infantry}}
18077 \DeclareRobustCommand\reconnaissancemark[1] [] {\natoappmark[#1]{reconnaissance}}
18078 \DeclareRobustCommand\corpsmark[1] [] {\natoappmark[#1]{,echelon=corps}}
18079 \DeclareRobustCommand\divisionmark[1] [] {\natoappmark[#1]{,echelon=division}}
18080 \DeclareRobustCommand\brigademark[1] [] {\natoappmark[#1]{,echelon=brigade}}
18081 \DeclareRobustCommand\regimentmark[1] [] {\natoappmark[#1]{,echelon=regiment}}
18082 \DeclareRobustCommand\sofmark[1] [] {\natoappmark[#1]{\infantry,text=SOF}}
18083 \DeclareRobustCommand\mountaineermark[1] [] {%
18084 \natoappmark[#1]{infantry,lower=mountain}}
18085 \DeclareRobustCommand\airbornemark[1] [] {%
18086 \natoappmark[#1]{infantry,lower=airborne}}
18087 \DeclareRobustCommand\amphibiousmark[1] [] {\natoappmark[#1]{,lower=amphibious}}
18088 \DeclareRobustCommand\airassaultmark[1] [] {%
18089 \natoappmark[#1]{infantry,upper=air assault}}

```

5.6.19 Utility macros used in the symbols

Here, we define the main symbols used when making markers. Since some of these symbols share code, we will create some regular \TeX macros to hold the path definitions. This is by far the simplest way of storing just the path specifications.

`\testpath`

```

18090 \def\testpath#1{\csname n@toapp@#1\endcsname}

```

Corps support for friendly, hostile, neutral, and unknown factions.

```

\n@toapp@corps@sup@friendly
\n@toapp@corps@sup@hostile
\n@toapp@corps@sup@neutral
\n@toapp@corps@sup@unknown

```

```

18091 \def\n@toapp@corps@sup@friendly{(.75,.5)--(.5,0)--(.75,-.5)}
18092 % (M.north east)--(M.east-.25,0)--(M.south east)}
18093 \def\n@toapp@corps@sup@hostile{(.95,.5)--(.45,0)--(.95,-.5)}
18094 \def\n@toapp@corps@sup@neutral{(.5,.5)--(.35,0)--(.5,-.5)}
18095 \def\n@toapp@corps@sup@unknown{(.75,.5)--(.5,0)--(.75,-.5)}

```

Corps support, base

```

\n@toapp@corps@support

```

```

18096 \def\n@toapp@corps@support#1{
18097   \ifx\n@toapp@friendly#1\n@toapp@corps@sup@friendly%
18098   \else\ifx\n@toapp@hostile#1\n@toapp@corps@sup@hostile%
18099   \else\ifx\n@toapp@neutral#1\n@toapp@corps@sup@neutral%
18100   \else\ifx\n@toapp@unknown#1\n@toapp@corps@sup@unknown%
18101   \fi\fi\fi\fi}

```



natoapp6c/s/TBD

Special placeholder for symbols To Be Done.

```

18102 \tikzset{
18103   natoapp6c/s/TBD/.pic={\n@toapp@text@normal{\color{magenta}TBD};}
18104 }

```

5.6.20 Symbols used when defining weaponry



natoapp6c/s/weapon

```

18105 \tikzset{
18106   pics/natoapp6c/s/weapon/.is choice,
18107   pics/natoapp6c/s/weapon/base/.style={
18108     code={\path [pic actions] (0,-0.2)--(0,.2);}},
18109   pics/natoapp6c/s/weapon/top/.style={
18110     code={\path [pic actions] (0,.2)--(0,.35);}},
18111   pics/natoapp6c/s/weapon/bottom/.style={
18112     code={\path [pic actions] (0,-.35)--(0,-.2);}},
18113   pics/natoapp6c/s/weapon/rifle/.style={
18114     code={\path [pic actions] (0.2, 0.1)--(0, 0.35)--(-0.2,0.1);}},
18115   pics/natoapp6c/s/weapon/machine gun/.style={
18116     code={\path [pic actions] (0.2, -0.35)--(-0.2, -0.35);}},
18117   pics/natoapp6c/s/weapon/grenade launcher/.style={
18118     code={\path [pic actions] (0,0) circle (0.1);}},
18119   pics/natoapp6c/s/weapon/missile launcher/.style={

```

```

18120     code={%
18121         \path [pic actions] (0.2, 0.15)
18122             to[out=90,in=90,looseness=1.75] (-0.2, 0.15);}},
18123     pics/natoapp6c/s/weapon/non lethal/.style={
18124         code={\path [pic actions] (-.2,.35) -- (.2,.35);}},
18125     pics/natoapp6c/s/weapon/multi fire/.style={
18126         code={\path[pic actions] (.2,-.2)--(.2, .2) (-.2,-.2)--(-.2,0.2);}},
18127     pics/natoapp6c/s/weapon/air defence/.style={
18128         code={%
18129             \path[pic actions] (0.2, -0.4)
18130                 to[out=90,in=90,looseness=1.7] (-0.2, -0.4) -- cycle;}},
18131     pics/natoapp6c/s/weapon/anti tank/.style={
18132         code={\path[pic actions] (0.2, -0.4)--(0,-0.2)--(-0.2,-0.4);}},
18133     pics/natoapp6c/s/weapon/full/.style={
18134         code={%
18135             \pic[draw]{natoapp6c/s/weapon=base};
18136             \pic[draw]{natoapp6c/s/weapon=top};
18137             \pic[draw]{natoapp6c/s/weapon=bottom};}},
18138     pics/natoapp6c/s/weapon/.default=full
18139 }

```



natoapp6c/s/type

(Weight) class of weapons: light, medium, heavy

```

18140 \tikzset{
18141     pics/natoapp6c/s/type/.is choice,
18142     pics/natoapp6c/s/type/light/.style={
18143         code={\path [fill=pgfstrokecolor,pic actions] (-0.2, -0.12) rectangle (.2,-.08);}},
18144     pics/natoapp6c/s/type/medium/.style={
18145         code={
18146             \path [fill=pgfstrokecolor,pic actions]
18147                 (-0.2, -0.12) rectangle (.2,-.08)
18148                 (-0.2, -0.22) rectangle (.2,-.18);}},
18149     pics/natoapp6c/s/type/heavy/.style={
18150         code={
18151             \path [fill=pgfstrokecolor,pic actions]
18152                 (-0.2, -0.12) rectangle (.2,-.08)
18153                 (-0.2, -0.22) rectangle (.2,-.18)
18154                 (-0.2, -0.32) rectangle (.2,-.28);}},
18155     pics/natoapp6c/s/type/vlight/.style={
18156         code={\path [fill=pgfstrokecolor,pic actions]
18157             (-.025,-0.2) rectangle (.025,.2);}},
18158     pics/natoapp6c/s/type/vmedium/.style={
18159         code={\path [fill=pgfstrokecolor,pic actions]
18160             (-.075,-0.2) rectangle (-.025,.2)
18161             (.025, -0.2) rectangle (.075,.2);}},
18162     pics/natoapp6c/s/type/vheavy/.style={
18163         code={\path [fill=pgfstrokecolor,pic actions]
18164             (-.125,-0.2) rectangle (-.075,.2)
18165             (-.025,-0.2) rectangle (.025,.2)
18166             (.075,-0.2) rectangle (.125,.2);}},

```

```
18167 pics/natoapp6c/s/type/.default=light,
18168 }
```

5.6.21 The symbols

Next, we define all the symbols. Note that we define them all as if they are in the main section of the symbol, since top, bottom, and below symbols are automatically scaled.

	natoapp6c/s/above corps support
---	---------------------------------

```
18169 \tikzset{%
18170   natoapp6c/s/above corps support/.pic={%
18171     \edef\n@toapp@path{\n@toapp@corps@support{\natoapp@fac}}
18172     \expandafter\path[draw] \n@toapp@path;
18173     \expandafter\path[draw,xscale=-1] \n@toapp@path;},
18174 }
```

	natoapp6c/s/air assault with organic lift
---	---

```
18175 \tikzset{%
18176   natoapp6c/s/air assault with organic lift/.pic={%
18177     \ifx\n@toapp@hostile\natoapp@fac%
18178     \def\n@toapp@path{(-.75,-.2)--(-.15,-.2)--(0,-.5)--(.15,-.2)--(.75,-.2)}
18179     \else
18180     \def\n@toapp@path{(-.75,-.2)--(-.1,-.2)--(0,-.325)--(.1,-.2)--(.75,-.2)}
18181     \fi
18182     \path[draw] \n@toapp@path;},
18183 }
```

	natoapp6c/s/air decoy
---	-----------------------

```
18184 \tikzset{%
18185   natoapp6c/s/air decoy/.pic={%
18186     \pic[pic actions]{natoapp6c/s/decoy};
18187     \path[fill=pgfstrokelcolor,pic actions] (0.4, -0.2) rectangle (-0.4, -0.15);},
18188 }
```

	natoapp6c/s/air assault
---	-------------------------

```
18189 \tikzset{%
18190   natoapp6c/s/air assault/.pic={%
18191     \path[draw] ([shift={(150:.4)}]0,-.1)--(0,-.1)--([shift={(30:.4)}]0,-.1);},
18192 }
```



natoapp6c/s/air defence

```
18193 \tikzset{%
18194   natoapp6c/s/air defence/.pic={%
18195     \ifx\natoapp@fac\n@to@pp@friendly%
18196     \def\n@toapp@opt{[out=90,in=90,looseness=.675]}%
18197     \else\ifx\natoapp@fac\n@to@pp@neutral%
18198     \def\n@toapp@opt{[out=90,in=90,looseness=1]}%
18199     \else%
18200     \def\n@toapp@opt{[out=45,in=135,looseness=1.5]}%
18201     \fi\fi%
18202     \edef\n@toapp@path{(M.south west) to\n@toapp@opt (M.south east)}
18203     \path[draw] \n@toapp@path;},
18204 }
```



natoapp6c/s/air strip

```
18205 \tikzset{%
18206   natoapp6c/s/air strip/.pic={%
18207     \path[fill=pgfstrokecolor] (-.4,-.1) rectangle(.4,0);
18208     \path[rotate=45,fill=pgfstrokecolor] (-.4,0) rectangle (.4,.1);
18209   }
18210 }
```



natoapp6c/s/air traffic

```
18211 \tikzset{%
18212   natoapp6c/s/air traffic/.pic={
18213     \path[fill=pgfstrokecolor]
18214     (0.33,0.21)--
18215     (0.33, -0.21)--
18216     (-0.33, 0.21)--
18217     (-0.33,-0.21)--
18218     cycle;},
18219 }
```



natoapp6c/s/airship

```
18220 \tikzset{%
18221   natoapp6c/s/airship/.pic={%
18222     % \path (0.45, 0.175) rectangle (-0.45, -0.175);
18223     \path[pic actions] (0, 0) ellipse (0.45 and 0.15);
18224     \begin{scope}
18225       \clip (0, 0) ellipse (0.45 and 0.15) [reverseclip];
18226       \path[pic actions]
18227       (0.2,0)--(0.3,0.175)--(0.4,0.175)--(0.375,0)
18228       --(0.4,-0.175)--(0.3, -0.175)--cycle;
```

```

18229 \end{scope}},
18230 }

```

	natoapp6c/s/airborne
--	----------------------

```

18231 \tikzset{%
18232   natoapp6c/s/airborne/.pic={%
18233     \ifx\n@to@pp@neutral\natoapp@fac%
18234       \draw (0,-0.05) arc(0:180:0.15);
18235       \draw (0,-0.05) arc(180:0:0.15);
18236     \else%
18237       \draw (0,-0.05) arc(0:180:0.2);
18238       \draw (0,-0.05) arc(180:0:0.2);
18239     \fi},
18240 }

```

	natoapp6c/s/ammunition
--	------------------------

```

18241 \tikzset{%
18242   natoapp6c/s/ammunition/.pic={\path[draw]
18243     (0.175,-0.175)--(-0.175,-0.175)
18244     (0.125,-0.175)--(0.125, 0) to[out=90,in=90,looseness=2.75]
18245     (-0.125, 0)--(-0.125, -0.175)};},
18246 }

```

	natoapp6c/s/amphibious
--	------------------------

```

18247 \tikzset{%
18248   natoapp6c/s/amphibious/.pic={
18249     \def\n@to@pp@tmp{0}
18250     \ifn@to@pp@below\def\n@to@pp@tmp{- .1}\fi
18251     \ifn@to@pp@mod
18252       \path[draw,shift={(0,\n@to@pp@tmp)}](1.21,0)
18253       to[out=-90,in=-90,looseness=2.25] (1.05, 0)
18254       to[out= 90,in= 90,looseness=2.25] (0.89, 0)
18255       to[out=-90,in=-90,looseness=2.25] (0.73, 0)
18256       to[out= 90,in= 90,looseness=2.25] (0.57, 0)
18257       to[out=-90,in=-90,looseness=2.25] (0.41, 0)
18258       to[out= 90,in= 90,looseness=2.25] (0.25, 0)
18259       to[out=-90,in=-90,looseness=2.25] (0.08, 0)
18260       to[out= 90,in= 90,looseness=2.25] (-0.08, 0)
18261       to[out=-90,in=-90,looseness=2.25] (-0.25, 0)
18262       to[out= 90,in= 90,looseness=2.25] (-0.41, 0)
18263       to[out=-90,in=-90,looseness=2.25] (-0.57, 0)
18264       to[out= 90,in= 90,looseness=2.25] (-0.73, 0)
18265       to[out=-90,in=-90,looseness=2.25] (-0.89, 0)
18266       to[out= 90,in= 90,looseness=2.25] (-1.05, 0)
18267       to[out=-90,in=-90,looseness=2.25] (-1.21, 0)

```

```

18268 \else
18269 \path[draw,shift={(0,\n@to@pp@tmp)}](0.73, 0)
18270 to[out= 90,in= 90, looseness=2.25] (0.57, 0)
18271 to[out=-90,in=-90, looseness=2.25] (0.41, 0)
18272 to[out= 90,in= 90, looseness=2.25] (0.25, 0)
18273 to[out=-90,in=-90, looseness=2.25] (0.08, 0)
18274 to[out= 90,in= 90, looseness=2.25] (-0.08, 0)
18275 to[out=-90,in=-90, looseness=2.25] (-0.25, 0)
18276 to[out= 90,in= 90, looseness=2.25] (-0.41, 0)
18277 to[out=-90,in=-90, looseness=2.25] (-0.57, 0)
18278 to[out= 90,in= 90, looseness=2.25] (-0.73, 0)
18279 \fi
18280 ;
18281 },
18282 }

```



natoapp6c/s/amphibious warfare ship

```

18283 \tikzset{%
18284 natoapp6c/s/amphibious warfare ship/.pic={
18285 \pic{natoapp6c/s/warfare vessel};
18286 \path[draw,fill=pgfstrokecolor]
18287 (0.15, 0.05) --
18288 (0.15, 0.2) --
18289 (-0.15, 0.2) --
18290 (-0.15, 0.05) -- cycle
18291 (0, -0.2) rectangle (0.25, -0.175);},
18292 }

```



natoapp6c/s/analysis

```

18293 \tikzset{%
18294 natoapp6c/s/analysis/.pic={
18295 \path[pic actions]
18296 (-0.3,-0.2)--(0.3,-0.2)--(0, -0.4)--cycle (0,-0.2)--(0,0.4);},
18297 }

```



natoapp6c/s/arrest

```

18298 \tikzset{%
18299 natoapp6c/s/arrest/.pic={
18300 \path[pic actions] circle(0.2);
18301 \pic[scale=.8]{natoapp6c/s/individual};},
18302 }

```



natoapp6c/s/artillery

```
18303 \tikzset{%
18304   natoapp6c/s/artillery/.pic={
18305     \path[pic actions] circle(0.2);},
18306 }
```



natoapp6c/s/anti tank anti armour

```
18307 \tikzset{%
18308   natoapp6c/s/anti tank anti armour/.pic={%
18309     \ifx\natoapp@fac\n@to@pp@unknown%
18310       \path[draw,pic actions] (225:.5)--(M.north)--(315:.5);
18311     \else%
18312       \path[draw,pic actions] (M.south west)--(M.north)--(M.south east);%
18313     \fi},
18314 }
```



natoapp6c/s/antenna

```
18315 \tikzset{%
18316   natoapp6c/s/antenna/.pic={\path[draw]
18317     (0, -0.3) -- (0, 0.3) (-0.125, 0.3) -- (0, 0.2) -- (0.125, 0.3);},
18318 }
```



natoapp6c/s/armoured

```
18319 \tikzset{%
18320   natoapp6c/s/armoured/.pic={\path[draw]
18321     (-0.275,0.2) arc(90:270:0.2)--(0.275, -0.2) arc(270:450:0.2)--cycle;},
18322 }
```



natoapp6c/s/armoured fighting vehicle

```
18323 \tikzset{%
18324   natoapp6c/s/armoured fighting vehicle/.pic={
18325     \path[fill=pgfstrokecolor] (-.4,-.2) rectangle (-.3,.2) (.3,-.2) rectangle (.4,.2);
18326     \path[pic actions] (-.3,0) -- (0,.2) -- (.3,0) -- (0,-.2) -- cycle;},
18327 }
```



natoapp6c/s/armoured personnel carrier

```
18328 \tikzset{%
```

```

18329 natoapp6c/s/armoured personnel carrier/.pic={
18330   \pic[sub pic actions,draw]{natoapp6c/s/vehicle};
18331   \path[pic actions] (.35,.15)--(0,.3)--(-.35,.15)};
18332 }

```



natoapp6c/s/arctic

```

18333 \tikzset{%
18334   natoapp6c/s/arctic/.pic={
18335     \draw (-0.325,0.135) arc(180:270:0.075 and 0.15) --
18336       +(0.5, 0) arc(-90:0:0.075 and 0.15)};
18337 }

```



natoapp6c/s/automobile

```

18338 \tikzset{%
18339   natoapp6c/s/automobile/.pic={
18340     \begin{scope}
18341       \clip (0.2,-0.15) circle(0.05) (-0.2,-0.15) circle(0.05) [reverseclip];
18342       \path[pic actions]
18343         (0.3, -0.15) --
18344         (-0.3, -0.15) --
18345         (-0.3, 0.025) --
18346         (-0.1, 0.025) --
18347         (-0.1, 0.2) --
18348         ( 0.1, 0.2) --
18349         ( 0.1, 0.025) --
18350         ( 0.3, 0.025) -- cycle
18351         ( 0.075, 0.025) rectangle (-0.075, 0.175);
18352     \end{scope}
18353     \path[pic actions]
18354       ( 0.2, -0.15) circle (0.05)
18355       (-0.2, -0.15) circle (0.05);
18356   },
18357 }

```



natoapp6c/s/balloon

```

18358 \tikzset{%
18359   natoapp6c/s/balloon/.pic={%
18360     \path[pic actions] (0, 0.025) circle (0.175);
18361     \begin{scope}
18362       \clip (0, 0.025) circle (0.175) [reverseclip];
18363       \path[pic actions] (-0.05,0) rectangle (0.05,-0.2)--(0.05,0);
18364     \end{scope}};
18365 }

```



natoapp6c/s/bar

```

18366 \tikzset{
18367   natoapp6c/s/bar/.pic={
18368     \path[fill=pgfstrokecolor] (-.3,-.1) rectangle (.3,.1);},
18369 }

```



natoapp6c/s/base

```

18370 \tikzset{
18371   natoapp6c/s/base/.pic={
18372     \path[pic actions] circle(.2);
18373     \path[pic actions]
18374     (-.2,0) -- (.2,0)
18375     ( 0,-.2) -- (0 ,.2)
18376     (225:.2) -- (45:.2)
18377     (135:.2) -- (-45:.2);
18378   }
18379 }

```



natoapp6c/s/bicycle equipped

```

18380 \tikzset{%
18381   natoapp6c/s/bicycle equipped/.pic={\draw(0,0) circle(.1);},
18382 }

```



natoapp6c/s/boat

```

18383 \tikzset{%
18384   natoapp6c/s/boat/.pic={
18385     \path[pic actions]
18386     (-0.2, -0.2) --
18387     ( 0.2, -0.2) --
18388     ( 0.35, 0.05) --
18389     (-0.15, 0.05) --
18390     (-0.075, 0.2) --
18391     (-0.175, 0.2) --
18392     (-0.25, 0.05) --
18393     (-0.35, 0.05) --
18394     cycle;},
18395 }

```



natoapp6c/s/booby trap

```

18396 \tikzset{%

```

```

18397 natoapp6c/s/booby trap/.pic={
18398   \path[draw] (0, -0.2) ellipse(0.2 and 0.065);
18399   \begin{scope}
18400     \clip (0, -0.2) ellipse(0.2 and 0.065) [reverseclip];
18401     \path[draw] (-0.2, -0.2) -- (0, 0.2) -- (0.2, -0.2);
18402   \end{scope}},
18403 }

```



natoapp6c/s/bottomed

```

18404 \tikzset{%
18405   natoapp6c/s/bottomed/.pic={
18406     \path[draw,fill=pgfstrokecolor] (-0.33,.1) rectangle(0.33,.2);},
18407 }

```



natoapp6c/s/bridge

```

18408 \tikzset{%
18409   pics/natoapp6c/s/bridge/.is choice,
18410   pics/natoapp6c/s/bridge/none/.style={
18411     code={\path[pic actions]
18412       (0.35,-0.15)--(0.25,-0.05)--(-0.25,-0.05)--(-0.35,-0.15)
18413       (0.35, 0.15)--(0.25, 0.05)--(-0.25, 0.05)--(-0.35, 0.15);}},
18414   pics/natoapp6c/s/bridge/fixe/.style={
18415     code={\pic{natoapp6c/s/bridge};\pic{natoapp6c/s/type=vlight};}},
18416   pics/natoapp6c/s/bridge/folding/.style={
18417     code={\pic{natoapp6c/s/bridge=none};
18418       \path[draw] (.1,-.2) -- (-.1,-.2) -- (-.1,.2) -- (.1,.2);}},
18419   pics/natoapp6c/s/bridge/hollow/.style={
18420     code={\pic{natoapp6c/s/bridge=none};
18421       \path[draw] (.1,-.2) -- (-.1,-.2) -- (-.1,.2) -- (.1,.2) -- cycle;}},
18422   pics/natoapp6c/s/bridge/.default=none,
18423 }

```



natoapp6c/s/capsule

```

18424 \tikzset{%
18425   natoapp6c/s/capsule/.pic={
18426     \path[pic actions]
18427     ($(0.25, -0.2)!0.1!(0, 0.5)$) --
18428     ($(0.25, -0.2)!0.5!(0, 0.5)$) to[in=75, out=105, looseness=0.75]
18429     ($(0, 0.5)!0.5!(-0.25, -0.2)$) --
18430     ($(0, 0.5)!0.9!(-0.25, -0.2)$) to[in=285, out=255, looseness=0.55]
18431     cycle;},
18432 }

```



natoapp6c/s/carrier

```
18433 \tikzset{%
18434   natoapp6c/s/carrier/.pic={
18435     \pic{natoapp6c/s/warfare vessel};
18436     \path[draw,fill=pgfstrokecolor]
18437       (-0.15, 0.05) --
18438       (-0.15, 0.2) --
18439       (-0.3, 0.2) --
18440       (-0.3, 0.05) -- cycle;},
18441 }
```



natoapp6c/s/chemical biological radiological nuclear

```
18442 \tikzset{%
18443   natoapp6c/s/chemical biological radiological nuclear/.pic={
18444     \path[draw,fill=pgfstrokecolor] (-0.29,0.1) circle(0.096) (0.29,0.1) circle(0.096);
18445     \path[pic actions] (0.15,-0.2) arc(0:90:0.45 and 0.375)
18446     (-0.15,-0.2) arc(180:90:0.45 and 0.375);},
18447 }
```



natoapp6c/s/civilian military cooperation

```
18448 \tikzset{%
18449   natoapp6c/s/civilian military cooperation/.pic={%
18450     \path[draw] (.375,.2)--(-.375,.2)--(-.375,-.025)
18451     to[in=270, out=270, looseness=0.75] (.375,-.025)--cycle;},
18452 }
```



natoapp6c/s/civilian police

```
18453 \tikzset{%
18454   natoapp6c/s/civilian police/.pic={%
18455     \path[draw] (0.225, 0.2)
18456     to[in=270, out=270, looseness=3] (-0.225, 0.2)
18457     to [in=270, out=270, looseness=1.5] (0,0.2)
18458     to [in=270, out=270, looseness=1.5] (0.225, 0.2) -- cycle;},
18459 }
```



natoapp6c/s/civilian telecommunications

```
18460 \tikzset{%
18461   natoapp6c/s/civilian telecommunications/.pic={
18462     \path[draw] (0.075, -0.2){[line join=bevel] -- (0, 0.1) -- (-0.075, -0.2)}
18463     (0.065, -0.05) -- (-0.065, -0.05)
```

```

18464      (-0.325, 0.2) -- (-0.15, 0.125) -- (-0.15, 0.175) -- (0, 0.1) -- (0.15, 0.175) -- (0.15, 0.125) -- (0.3
18465    },
18466  }

```



natoapp6c/s/coast guard vessel

```

18467 \tikzset{%
18468   natoapp6c/s/coast guard vessel/.pic={%
18469     \pic[draw] {natoapp6c/s/ship};
18470     \path[pic actions] (0.15, 0.05) -- (0, -0.2) (0.2, 0.05)--(0.05, -0.2);}
18471 }

```



natoapp6c/s/combat support

```

18472 \tikzset{%
18473   natoapp6c/s/combat support/.pic={%
18474     \path[fill=pgfstrokecolor]
18475     (.15,.2)--(-.15,.2)--(-.15,-.05)--(0,-.2)--(.15,-.05) -- cycle;}
18476 }

```



natoapp6c/s/combatant

```

18477 \tikzset{%
18478   natoapp6c/s/combatant/.pic={%
18479     \begin{scope}[xshift=-4.5, yshift=-5]
18480       \path[pic actions]
18481         (0.3213,0.0534) .. controls (0.3186,0.0295) and (0.3072,0.0136) ..
18482         (0.2925,0.0063) .. controls (0.2777,-0.0010) and (0.2605,0.0001) ..
18483         (0.2461,0.0068) .. controls (0.2317,0.0136) and (0.2198,0.0265) ..
18484         (0.2163,0.0433) .. controls (0.2147,0.0513) and (0.2150,0.0601) ..
18485         (0.2179,0.0694) .. controls (0.1304,0.1129) and (0.0223,0.1961) ..
18486         (0.0013,0.3209) .. controls (0.0601,0.1809) and (0.1770,0.0912) ..
18487         (0.3213,0.0534) -- cycle
18488         (0.2304,0.0633) .. controls (0.2287,0.0570) and (0.2287,0.0513) ..
18489         (0.2298,0.0461) .. controls (0.2323,0.0340) and (0.2409,0.0245) ..
18490         (0.2520,0.0193) .. controls (0.2630,0.0141) and (0.2760,0.0135) ..
18491         (0.2864,0.0186) .. controls (0.2932,0.0220) and (0.2992,0.0277) ..
18492         (0.3033,0.0370) .. controls (0.2845,0.0413) and (0.2597,0.0498) ..
18493         (0.2304,0.0633) -- cycle
18494         (0.1785,0.1137) .. controls (0.2446,0.1612) and (0.3061,0.2300) ..
18495         (0.3214,0.3209) .. controls (0.2864,0.2377) and (0.2310,0.1723) ..
18496         (0.1614,0.1249)
18497         (0.1443,0.1138) .. controls (0.1011,0.0871) and (0.0530,0.0670) ..
18498         (0.0014,0.0535) .. controls (0.0041,0.0295) and (0.0154,0.0136) ..
18499         (0.0302,0.0063) .. controls (0.0449,-0.0010) and (0.0621,0.0001) ..
18500         (0.0765,0.0069) .. controls (0.0909,0.0137) and (0.1028,0.0265) ..
18501         (0.1063,0.0433) .. controls (0.1079,0.0513) and (0.1076,0.0602) ..
18502         (0.1047,0.0694) .. controls (0.1230,0.0785) and (0.1422,0.0893) ..

```

```

18503      (0.1613,0.1019)
18504      (0.0928,0.0461) .. controls (0.0903,0.0340) and (0.0816,0.0245) ..
18505      (0.0706,0.0193) .. controls (0.0596,0.0141) and (0.0466,0.0135) ..
18506      (0.0362,0.0186) .. controls (0.0294,0.0220) and (0.0234,0.0277) ..
18507      (0.0193,0.0370) .. controls (0.0381,0.0413) and (0.0629,0.0498) ..
18508      (0.0921,0.0633) --
18509      (0.0921,0.0633) .. controls (0.0938,0.0570) and (0.0938,0.0512) ..
18510      (0.0928,0.0461) -- cycle;
18511      \end{scope}
18512  },
18513 }

```



natoapp6c/s/combined arms

```

18514 \tikzset{%
18515   natoapp6c/s/combined arms/.pic={%
18516     \path[draw] pic {natoapp6c/s/armoured};
18517     \path[draw] (0.275, 0.2) -- (-0.275, -0.2) (0.275, -0.2) -- (-0.275, 0.2)};
18518 }

```



natoapp6c/s/computer system

```

18519 \tikzset{%
18520   natoapp6c/s/computer system/.pic={
18521     \path[draw,fill=pgfstrokecolor,pic actions]
18522     (-.3, .28) rectangle (.3, .3)
18523     (-.3, -.18) rectangle (.3, -.2)
18524     (-.3, -.18) rectangle (-.3, .28)
18525     (.3, -.18) rectangle (.3, .28)
18526     (-.3, -.3) rectangle (.3, -.28)
18527     (-.05,-.28) rectangle (.05,-.18)};
18528 }

```



natoapp6c/s/control

```

18529 \tikzset{%
18530   natoapp6c/s/control/.pic={
18531     \path[pic actions]
18532     [{Stealth[inset=0pt,scale=0.5]}--{Stealth[inset=0pt,scale=0.5]}]
18533     (0, .2) -- (0, -.2);
18534     \path[pic actions]
18535     [{Stealth[inset=0pt,scale=0.5]}--{Stealth[inset=0pt,scale=0.5]}]
18536     (-.2, 0) -- (.2, 0)};
18537 }

```



natoapp6c/s/convoy

```
18538 \tikzset{%
18539   natoapp6c/s/convoy/.pic={
18540     \path[draw,fill=pgfstrocolor]
18541       (0.35, 0.175) --
18542       (-0.35, 0.175) --
18543       (-0.35, -0.175) --
18544       (-0.2, -0.175) --
18545       (-0.2, 0.025) --
18546       (0.2, 0.025) --
18547       (0.2, -0.175) --
18548       (0.35, -0.175) -- cycle;},
18549 }
```



natoapp6c/s/corps support

```
18550 \tikzset{%
18551   natoapp6c/s/corps support/.pic={%
18552     \edef\n@toapp@path{\n@toapp@corps@support{\natoapp@fac}}
18553     \expandafter\path[draw] \n@toapp@path;},
18554 }
```



natoapp6c/s/crime

```
18555 \tikzset{%
18556   natoapp6c/s/crime/.pic={\path[draw,dashed] (-.45,.25)--(.45,-.25);},
18557 }
```



natoapp6c/s/decoy

```
18558 \tikzset{%
18559   natoapp6c/s/decoy/.pic={%
18560     \path[fill=pgfstrocolor,draw,yshift=1.5]
18561       (0.2, 0) -- (0.4, 0.15) -- (0.4, -0.15) -- cycle
18562       (-0.1, 0) -- (0.1, 0.15) -- (0.1, -0.15) -- cycle
18563       (-0.4, 0) -- (-0.2, 0.15) -- (-0.2, -0.15) -- cycle;},
18564 }
```



natoapp6c/s/direct communications

```
18565 \tikzset{%
18566   natoapp6c/s/direct communications/.pic={
18567     \path[draw] (-.35,0) circle(.1) (.35,0) circle(.1);
18568     \pic[fill=pgfstrocolor]{natoapp6c/s/intermodal};
18569 }
```

```

18569 },
18570 }

```



natoapp6c/s/direction finding

```

18571 \tikzset{%
18572   natoapp6c/s/direction finding/.pic={%
18573     \path[draw] (-.3,.2)--(0,.4)--(.3,.2) (0,.4)--(0,-.4);},
18574 }

```



natoapp6c/s/diving

```

18575 \tikzset{%
18576   pics/natoapp6c/s/diving/.is choice,
18577   pics/natoapp6c/s/diving/none/.style={
18578     code={
18579       \path[pic actions] (0,0) circle(.1) (0,0) circle(.25);
18580       \begin{scope}
18581         \clip (0,0) circle(.25) [reverseclip];
18582         \path[pic actions] (-.3,-.1) rectangle(.3,.1)
18583           (0,0) -- (-45:.4) -- (-135:.4) -- cycle;
18584       \end{scope}}},
18585   pics/natoapp6c/s/diving/military/.style={
18586     code={
18587       \begin{scope}[even odd rule]
18588         \clip (0,0) circle(0.1)[reverseclip];
18589         \pic[fill=pgfstrokecolor]{natoapp6c/s/diving=none};
18590       \end{scope}
18591       \path[fill=pgfstrokecolor] (0,0) circle(0.08);
18592     }},
18593   pics/natoapp6c/s/diving/.default=none,
18594 }

```



natoapp6c/s/drilling

```

18595 \tikzset{%
18596   natoapp6c/s/drilling/.pic={\path[fill=pgfstrokecolor]
18597     (-0.1,-0.2) -- (0.1,-0.2) -- (0.2, 0.2) -- (-0.2, 0.2) -- cycle;},
18598 }

```



natoapp6c/s/earthmover

```

18599 \tikzset{%
18600   natoapp6c/s/earthmover/.pic={
18601     \pic{natoapp6c/s/tank};
18602     \path[pic actions] (.3,

```

```

18603     .3)--(.175,.35)--(-.175,.35)--(-.3,.3)
18604     (0,.2)--(0,.35);
18605   },
18606 }

```



natoapp6c/s/electric power

```

18607 \tikzset{%
18608   natoapp6c/s/electric power/.pic={
18609     \path[pic actions]
18610       (-0.05, 0) .. controls(-0.06, 0.14) ..
18611       ( 0, 0.09) .. controls( 0.03, 0.06) ..
18612       ( 0, 0.06) .. controls(-0.03, 0.06) ..
18613       ( 0, 0.09) .. controls( 0.06, 0.14) ..
18614       (0.05, 0)
18615       ($(-55:0.125) + (0, 0.075)$) arc(-55:235:0.125) arc(415:360:0.05) --
18616       +(0, -0.08) arc(180:360:0.05035) --
18617       +(0, 0.08) arc(180:125:0.05) -- cycle;
18618   },
18619 }

```



natoapp6c/s/electronic ranging

```

18620 \tikzset{%
18621   natoapp6c/s/electronic ranging/.pic={%
18622     \path[draw] (135:.225) arc (135:315:.225)--cycle (0,0)--(225:-.225)};
18623 }

```



natoapp6c/s/electronic warfare wide

```

18624 \tikzset{%
18625   natoapp6c/s/electronic warfare wide/.pic={%
18626     % OBS
18627     \node[natoapp6c/text,natoapp6c/normal text] at(-.25,0){E};
18628     \node[natoapp6c/text,natoapp6c/normal text] at(.25,0){W};
18629   },
18630 }

```



natoapp6c/s/engineer

```

18631 \tikzset{%
18632   natoapp6c/s/engineer/.pic={\path[draw]
18633     (.4,-.2)--(.4,.2)--(-.4,.2)--(-.4,-.2) (0,.2)--(0,-.2)};
18634 }

```



natoapp6c/s/enhanced location reporting system

```
18635 \tikzset{%
18636   natoapp6c/s/enhanced location reporting system/.pic={\path[draw]
18637     (0, -0.3) -- (0, 0.3) (-0.2, -.3) -- (0, 0.-.1) -- (0.2, -.3);},
18638 }
```



natoapp6c/s/environmental protection

```
18639 \tikzset{%
18640   natoapp6c/s/environmental protection/.pic={%
18641     \path[draw] (0, 0.2)
18642     -- (0.1, 0.05)
18643     -- (0.05, 0.05)
18644     -- (0.15, -0.05)
18645     -- (0.1, -0.05)
18646     -- (0.2, -0.15)
18647     -- (0.15, -0.15)
18648     -- (0.05, -0.15)
18649     -- (0.05, -0.2)
18650     -- (-0.05, -0.2)
18651     -- (-0.05, -0.15)
18652     -- (-0.2, -0.15)
18653     -- (-0.1, -0.05)
18654     -- (-0.15, -0.05)
18655     -- (-0.05, 0.05)
18656     -- (-0.1, 0.05)
18657     -- cycle;},
18658 }
```



natoapp6c/s/explosion

```
18659 \tikzset{%
18660   natoapp6c/s/explosion/.pic={%
18661     \node [shape=rectangle,
18662     starburst,
18663     draw,
18664     minimum width=0.9cm,
18665     minimum height=0.9cm,
18666     starburst point height=0.25cm,
18667     starburst points=12] {};},
18668 }
```



natoapp6c/s/finance

```
18669 \tikzset{%
18670   natoapp6c/s/finance/.pic={%
```

```

18671 \path[draw] (-.3,-.25) rectangle(.3,0)
18672 (-.3,0) -- ++(60:.28) -- ([shift=(120:.28)].3,0) -- (.3,0);},
18673 }

```



natoapp6c/s/fishing vessel

```

18674 \tikzset{%
18675 natoapp6c/s/fishing vessel/.pic={
18676 \path[pic actions]
18677 (-0.15, -0.2) --
18678 ( 0.15, -0.2) --
18679 ( 0.25, 0.025) --
18680 (-0.05, 0.025) --
18681 (-0.05, 0.125) --
18682 (-0.2, 0.125) --
18683 (-0.2, 0.025) --
18684 (-0.25, 0.025) -- cycle
18685 (0.025, 0.025) -- (0.025, 0.2)
18686 (0.025, 0.025) -- +(45:0.2);},
18687 }

```



natoapp6c/s/fire protection

```

18688 \tikzset{%
18689 natoapp6c/s/fire protection/.pic={%
18690 \path[fill=pgfstrokecolor] (0,0) circle(.2)
18691 (0,0) -- (60:.3) -- (120:.3) -- cycle
18692 (0,0) -- (-30:.3) -- (30:.3) -- cycle
18693 (0,0) -- (150:.3) -- (210:.3) -- cycle
18694 (0,0) -- (240:.3) -- (300:.3) -- cycle;
18695 },
18696 }

```



natoapp6c/s/fixed and rotary wing

```

18697 \tikzset{%
18698 natoapp6c/s/fixed and rotary wing/.pic={%
18699 \path[xscale=.45,yscale=.75,pic actions] pic {natoapp6c/s/fixed wing};
18700 \path[yscale=.45,xscale=.7,rotate=90, pic actions] pic {
18701 natoapp6c/s/rotary wing};
18702 },
18703 }

```



natoapp6c/s/fixed wing

```

18704 \tikzset{%

```

```

18705 natoapp6c/s/fixed wing/.pic={
18706   \path[pic actions]
18707     (-0.36,0.125) arc (77:275:0.075 and 0.125) -- (0,0) -- cycle
18708     ( 0.36,0.125) arc (-275:-77:-0.075 and 0.125) -- (0,0)
18709     --cycle;},
18710 }

```



natoapp6c/s/flame thrower

```

18711 \tikzset{%
18712   natoapp6c/s/flame thrower/.pic={
18713     \path[pic actions]
18714       (-0.1, -0.4) -- (-0.1, 0.3) to[out=90,in=90,looseness=2]
18715       (0.1, 0.3) -- (0.1, 0.275);},
18716 }

```



natoapp6c/s/floating

```

18717 \tikzset{%
18718   natoapp6c/s/floating/.pic={
18719     \path[draw]
18720       (-0.5, 0.100) --
18721       (-0.417, 0.242) --
18722       (-0.333, 0.100) --
18723       (-0.250, 0.242) --
18724       (-0.167, 0.100) --
18725       (-0.083, 0.242) --
18726       (0.0, 0.100) --
18727       (0.083, 0.242) --
18728       (0.167, 0.100) --
18729       (0.250, 0.242) --
18730       (0.333, 0.100) --
18731       (0.417, 0.242) --
18732       (0.5, 0.100);},
18733   pics/natoapp6c/s/surfaced/.style=natoapp6c/s/floating,
18734 }

```



natoapp6c/s/food

```

18735 \tikzset{%
18736   natoapp6c/s/food/.pic={
18737     \path[pic actions]
18738       (0.075, 0.2) to[out=210, in=150, looseness=1]
18739       (0.075, -0.2) to[out=180, in=180, looseness=1.5]
18740       (0.075, 0.2) -- cycle;},
18741 }

```



natoapp6c/s/fuel

```
18742 \tikzset{%
18743   natoapp6c/s/fuel/.pic={
18744     \path[draw] (0,0) -- (135:.3) -- (45:.3) -- cycle (0,0) -- (0,-.3);},
18745 }
```



natoapp6c/s/grenade launcher

```
18746 \tikzset{%
18747   pics/natoapp6c/s/grenade launcher/.is choice,%
18748   pics/natoapp6c/s/grenade launcher/none/.style={%
18749     code={%
18750       \pic[draw]{natoapp6c/s/rifle};
18751       \pic[draw]{natoapp6c/s/weapon=grenade launcher};}},%
18752   pics/natoapp6c/s/grenade launcher/non lethal/.style={
18753     code={%
18754       \pic[draw]{natoapp6c/s/non lethal weapon};
18755       \pic[draw]{natoapp6c/s/weapon=grenade launcher};}},
18756   pics/natoapp6c/s/grenade launcher/.default=none,
18757 }
```



natoapp6c/s/graffiti

```
18758 \tikzset{%
18759   natoapp6c/s/graffiti/.pic={
18760     \path[pic actions]
18761       (0.05, 0.2)
18762       arc (90:270:0.05)
18763       arc (450:270:0.05)
18764       arc (90:270:0.05)
18765       arc (450:270:0.05)
18766       (-0.05, 0.2)
18767       arc (90:270:0.05)
18768       arc (450:270:0.05)
18769       arc (90:270:0.05)
18770       arc (450:270:0.05);},
18771 }
```



natoapp6c/s/group

```
18772 \tikzset{%
18773   natoapp6c/s/group/.pic={
18774     \path(-.23,.05) pic [draw,scale=.8] {natoapp6c/s/individual};
18775     \path(0,-.05) pic [draw,scale=.8] {natoapp6c/s/individual};
18776     \path(.23,.05) pic [draw,scale=.8] {natoapp6c/s/individual};},
18777 }
```



natoapp6c/s/gun

```
18778 \tikzset{%
18779   pics/natoapp6c/s/gun/.is choice,
18780   pics/natoapp6c/s/gun/base/.style={
18781     code={
18782       \pic[draw]{natoapp6c/s/weapon=base};
18783       \pic[draw]{natoapp6c/s/weapon=top};
18784       \pic[draw]{natoapp6c/s/weapon=multi fire}}},
18785   pics/natoapp6c/s/gun/air defence/.style={
18786     code={
18787       \pic[draw]{natoapp6c/s/gun/base};
18788       \pic[draw]{natoapp6c/s/weapon=air defence}}},
18789   pics/natoapp6c/s/gun/anti tank/.style={
18790     code={
18791       \pic[draw]{natoapp6c/s/gun/base};
18792       \pic[draw]{natoapp6c/s/weapon/anti tank}}},
18793   pics/natoapp6c/s/gun/direct/.style={
18794     code={
18795       \pic[draw]{natoapp6c/s/gun/base};
18796       \pic[draw]{natoapp6c/s/weapon=bottom}}},
18797   pics/natoapp6c/s/gun/recoilless/.style={
18798     code={
18799       \pic[draw]{natoapp6c/s/rifle};
18800       \pic[yshift=-4,draw]{natoapp6c/s/weapon=multi fire}}},
18801   pics/natoapp6c/s/gun/.default=direct,
18802 }
```



natoapp6c/s/headquarters

```
18803 \tikzset{%
18804   natoapp6c/s/headquarters/.pic={
18805     \path[pic actions] (M.north west) -- ++(0,-.3) --
18806       ([shift=(-90:.3)]M.north east) -- (M.north east) -- cycle;},
18807 }
```



natoapp6c/s/house

```
18808 \tikzset{%
18809   natoapp6c/s/house/.pic={
18810     \path[pic actions]
18811       (-.125,-.175) rectangle (.125,.075)
18812       (-.167,.075) -- (0,.225) -- (.167,.075) -- cycle;},
18813 }
```



natoapp6c/s/howitzer

```
18814 \tikzset{%
18815   natoapp6c/s/howitzer/.pic={
18816     \pic[draw]{natoapp6c/s/weapon=base};
18817     \pic[draw]{natoapp6c/s/weapon=top};
18818     \pic[draw]{natoapp6c/s/weapon=multi fire};
18819     \pic[yshift=-8,draw]{natoapp6c/s/weapon=grenade launcher};
18820   },
18821 }
```



natoapp6c/s/in position

```
18822 \tikzset{%
18823   natoapp6c/s/in position/.pic={
18824     \path[draw,fill=pgfstrokecolor]
18825       (-.3,-.01) rectangle (-.2,.01) (.2,-.01) rectangle (.3,.01);},
18826 }
```



natoapp6c/s/individual

```
18827 \tikzset{%
18828   natoapp6c/s/individual/.pic={
18829     \path[pic actions]
18830       (0,.08) -- (0,-.3) (-.15,0) -- (.15,0) (0,.18) circle(.1);},
18831 }
```



natoapp6c/s/infantry

```
18832 \tikzset{%
18833   natoapp6c/s/infantry/.pic={
18834     \path[draw] (-.75,.5) -- (.75,-.5) (-.75,-.5) -- (.75,.5);},
18835 }
```



natoapp6c/s/intermodal

```
18836 \tikzset{%
18837   natoapp6c/s/intermodal/.pic={
18838     \path[pic actions]
18839       ( 0.15,  0.025) --
18840       (-0.15,  0.025) --
18841       (-0.15,  0.075) --
18842       (-0.25,  0) --
18843       (-0.15, -0.075) --
18844       (-0.15, -0.025) --
```

```

18845 ( 0.15, -0.025) --
18846 ( 0.15, -0.075) --
18847 ( 0.25, 0) --
18848 ( 0.15, 0.075) -- cycle;},
18849 }

```



natoapp6c/s/jagged wave

```

18850 \tikzset{%
18851 natoapp6c/s/jagged wave/.pic={
18852   \draw (0.3, -0.05) --
18853         (0.2, 0.05) --
18854         (0.1, -0.05) --
18855         (0, 0.05) --
18856         (-0.1, -0.05) --
18857         (-0.2, 0.05) --
18858         (-0.3, -0.05);},
18859 }

```



natoapp6c/s/jam

```

18860 \tikzset{%
18861 natoapp6c/s/jam/.pic={%
18862   \path[draw]
18863     (0.75, 0)
18864     to[out=90, in=90, looseness=2.25] ( 0.65, 0)
18865     to[out=-90, in=-90, looseness=2.25] ( 0.55, 0)
18866     to[out=90, in=90, looseness=2.25] ( 0.45, 0)
18867     to[out=-90, in=-90, looseness=2.25] ( 0.35, 0)
18868     to[out=90, in=90, looseness=2.25] ( 0.25, 0)
18869     to[out=-90, in=-90, looseness=2.25] ( 0.15, 0)
18870     to[out=90, in=90, looseness=2.25] ( 0.05, 0)
18871     to[out=-90, in=-90, looseness=2.25] (-0.05, 0)
18872     to[out=90, in=90, looseness=2.25] (-0.15, 0)
18873     to[out=-90, in=-90, looseness=2.25] (-0.25, 0)
18874     to[out=90, in=90, looseness=2.25] (-0.35, 0)
18875     to[out=-90, in=-90, looseness=2.25] (-0.45, 0)
18876     to[out=90, in=90, looseness=2.25] (-0.55, 0)
18877     to[out=-90, in=-90, looseness=2.25] (-0.65, 0)
18878     to[out=90, in=90, looseness=2.25] (-0.75, 0)
18879   ;},
18880 }

```



natoapp6c/s/jamming

```

18881 \tikzset{%
18882 natoapp6c/s/jamming/.pic={%
18883   \path(0,.4) pic {natoapp6c/s/jam} (0,.26) pic {natoapp6c/s/jam};},

```

18884 }



natoapp6c/s/jetski

```
18885 \tikzset{%
18886   natoapp6c/s/jetski/.pic={
18887     \path[pic actions]
18888       ( 0.3, -0.2) --
18889       (-0.3, -0.2) --
18890       (-0.35,-0.1) --
18891       (-0.1,  0.2) --
18892       ( 0,   0.2) --
18893       ( 0,   0.1) --
18894       (-0.05, 0.1) --
18895       (-0.1, -0.05) --
18896       ( 0.3, -0.05) --
18897       ( 0.3, -0.2) -- cycle;
18898 },
18899 }
```



natoapp6c/s/killing

```
18900 \tikzset{%
18901   natoapp6c/s/killing/.pic={\path[draw] (-.45,.25)--(.45,-.25);},
18902 }
```



natoapp6c/s/labour

```
18903 \tikzset{%
18904   natoapp6c/s/labour/.pic={%
18905     \path[draw] (-.15,.2) -- (.15,.2) (0,.2) -- (0,0)
18906     (-.15,0) -- ++(300:.3) -- ++(60:.3) -- cycle;},
18907 }
```



natoapp6c/s/land mine

```
18908 \tikzset{%
18909   pics/natoapp6c/s/land mine/.is choice,
18910   pics/natoapp6c/s/land mine/personnel/.style={
18911     code={\pic[fill=pgfstrokecolor]{natoapp6c/s/land mine=none};
18912           \path[pic actions] (135:0.35) -- (0, 0) -- (45:0.35);}},
18913   pics/natoapp6c/s/land mine/tank/.style={
18914     code={\pic[fill=pgfstrokecolor]{natoapp6c/s/land mine=none};}},
18915   pics/natoapp6c/s/land mine/none/.style={
18916     code={\path[pic actions] (0,0) circle(0.25);}},
18917   pics/natoapp6c/s/land mine/.default=none,
```

18918 }



natoapp6c/s/land missile

```
18919 \tikzset{%
18920   natoapp6c/s/land missile/.pic={\pic{natoapp6c/s/missile launcher};},
18921 }
```



natoapp6c/s/laser

```
18922 \tikzset{%
18923   natoapp6c/s/laser/.pic={
18924     \path[draw,line join=round,line cap=round,pic actions]
18925       ( 0.1, -0.25) --
18926       (-0.1, -0.225) --
18927       ( 0.1, -0.2) --
18928       (-0.1, -0.175) --
18929       ( 0.1, -0.15) --
18930       ( 0, -0.1375) --
18931       ( 0, -0.0125) --
18932       (-0.1, 0) --
18933       ( 0.1, 0.025) --
18934       (-0.1, 0.05) --
18935       ( 0.1, 0.075) --
18936       ( 0, 0.0875) --
18937       ( 0, 0.25)
18938       ( 0.1, 0.2) --
18939       ( 0, 0.25) --
18940       (-0.1, 0.2);},
18941 }
```



natoapp6c/s/launcher

```
18942 \tikzset{%
18943   natoapp6c/s/launcher/.pic={
18944     \path[draw] (-.3,-.2) -- (.3,.2) -- (.3,-.2);},
18945 }
```



natoapp6c/s/laundry

```
18946 \tikzset{%
18947   natoapp6c/s/laundry/.pic={%
18948     \path[draw] (0,-.3) -- (0,.1)
18949     (0,.1) -- ++(150:.25)
18950     (0,.1) -- ++(180:.2)
18951     (0,.1) -- ++(210:.25);},
```

18952 }



natoapp6c/s/machine gun

```
18953 \tikzset{%
18954   natoapp6c/s/machine gun/.pic={%
18955     \pic[draw]{natoapp6c/s/rifle};
18956     \pic[draw]{natoapp6c/s/weapon=machine gun};},
18957 }
```



natoapp6c/s/main gun

```
18958 \tikzset{%
18959   natoapp6c/s/main gun/.pic={
18960     \path[pic actions] (M.north west) -- ++(.25,0) --
18961       ([shift=(0:.25)]M.south west) -- (M.south west) -- cycle;},
18962 }
```



natoapp6c/s/maintenance

```
18963 \tikzset{%
18964   natoapp6c/s/maintenance/.pic={
18965     \path[fill=pgfstrokecolor]
18966       (-.38,.25)
18967       to[out=0,in=90,looseness=1.5] (-.2,.05) -- (.2,.05)
18968       to [out=90,in=180,looseness=1.5] (.38,.25) -- ++(0,-.08)
18969       to [out=180,in=90,looseness=1.5] (.28,0)
18970       to [out=-90,in=180,looseness=1.5] (.38,-.17) -- ++(0,-.08)
18971       to [out=180,in=-90,looseness=1.5] (.2,-.05) -- (-.2,-.05)
18972       to [out=-90,in=0,looseness=1.5] (-.38,-.25) -- ++(0,.08)
18973       to [out=0,in=-90,looseness=1.5] (-.28,0)
18974       to [out=90,in=0,looseness=1.5] (-.38,.17) -- cycle;
18975   },
18976 }
```



natoapp6c/s/medic

```
18977 \tikzset{%
18978   natoapp6c/s/medic/.pic={
18979     \path[pic actions]
18980       (-0.075,-0.2)
18981       --(0.075,-.2)
18982       --(.075,-.075)
18983       --(.2,-.075)
18984       --(.2,.075)
18985       --(.075,.075)
```

```

18986      --(.075,.2)
18987      --(-0.075,.2)
18988      --(-0.075,.075)
18989      --(-.2,.075)
18990      --(-.2,-.075)
18991      --(-.075,-.075)
18992      --cycle;},
18993 }

```



natoapp6c/s/medical

```

18994 \tikzset{%
18995   natoapp6c/s/medical/.pic={\path[draw] (-1,0) -- (1,0) (0,-1) -- (0,1)};},
18996 }

```



natoapp6c/s/medical treatment

```

18997 \tikzset{%
18998   natoapp6c/s/medical treatment/.pic={
18999     \path[draw] (0,0) pic {natoapp6c/s/medical}
19000     ([xscale=.5,shift={(0,-.2)}]M.west) -- ([xscale=.5,shift={(0,.2)}]M.west)
19001     ([xscale=.5,shift={(0,-.2)}]M.east) -- ([xscale=.5,shift={(0,.2)}]M.east)};},
19002 }

```



natoapp6c/s/mine

```

19003 \tikzset{%
19004   natoapp6c/s/mine/.pic={
19005     \path[fill=pgfstrokecolor,draw] (0,0) ellipse(.2 and .15)
19006     (0,0) -- ++(60:.3)
19007     (0,0) -- ++(90:.3)
19008     (0,0) -- ++(120:.3)
19009     (0,0) -- ++(240:.3)
19010     (0,0) -- ++(270:.3)
19011     (0,0) -- ++(300:.3)
19012     ;},
19013 }

```



natoapp6c/s/mine clearing equipment

```

19014 \tikzset{%
19015   natoapp6c/s/mine clearing equipment/.pic={
19016     \path[pic actions]
19017     (0, 0.2) -- (0, 0) -- (0.35, -0.2) -- (-0.35, -0.2) -- (0, 0)};},
19018 }

```



natoapp6c/s/mine warfare vessel

```

19019 \tikzset{%
19020   natoapp6c/s/mine warfare vessel/.pic={%
19021     \pic[scale=.8,fill=pgfstrokecolor,yshift=2.5]{natoapp6c/s/sea mine=top half};
19022     \pic          {natoapp6c/s/warfare vessel};
19023   },
19024 }

```



natoapp6c/s/missile

```

19025 \tikzset{%
19026   natoapp6c/s/missile/.pic={%
19027     \path[pic actions,draw]
19028       (0, 0.3)
19029       -- (-0.05, 0.2)
19030       -- (-0.05, -0.2)
19031       -- (-0.125,-0.3)
19032       -- (-0.125,-0.4)
19033       -- (0, -0.265)
19034       -- (0.125,-0.4)
19035       -- (0.125,-0.3)
19036       -- (0.05,-0.2)
19037       -- (0.05,0.2)
19038       -- cycle;},
19039 }

```



natoapp6c/s/missile launcher

```

19040 \tikzset{%
19041   pics/natoapp6c/s/missile launcher/.is choice,
19042   pics/natoapp6c/s/missile launcher/base/.style={
19043     code={
19044       \pic[draw]{natoapp6c/s/weapon=base};
19045       \pic[draw]{natoapp6c/s/weapon=top};
19046       \pic[draw]{natoapp6c/s/weapon=multi fire};
19047       \pic[draw]{natoapp6c/s/weapon=missile launcher};}},
19048   pics/natoapp6c/s/missile launcher/none/.style={
19049     code={
19050       \pic[draw]{natoapp6c/s/missile launcher=base};
19051       \path[pic actions] (-.2,-.2)--(-.2,-.35) (.2,-.2)--(.2,-.35);}},
19052   pics/natoapp6c/s/missile launcher/air defence/.style={
19053     code={
19054       \pic[draw]{natoapp6c/s/missile launcher=none};
19055       \pic[draw]{natoapp6c/s/weapon=air defence};}},
19056   pics/natoapp6c/s/missile launcher/anti tank/.style={
19057     code={
19058       \pic[draw]{natoapp6c/s/missile launcher=base};

```

```

19059     \pic[draw]{natoapp6c/s/weapon=anti tank};}},
19060 pics/natoapp6c/s/missile launcher/surface to surface/.style={
19061     code={%
19062     \pic[draw]{natoapp6c/s/missile launcher=none};
19063     \pic[draw]{natoapp6c/s/weapon=bottom};
19064     \pic[draw]{natoapp6c/s/weapon=machine gun};
19065     }},
19066 pics/natoapp6c/s/missile launcher/.default=none,
19067 }

```



natoapp6c/s/mobile advisor and support

```

19068 \tikzset{%
19069 natoapp6c/s/mobile advisor and support/.pic={
19070     \path[draw] (-.35,0) circle(.1) (.35,0) circle(.1);
19071     \path[draw,fill=pgfstrokecolor,pic actions]
19072     ( 0.15,  0.025) --
19073     (-0.25,  0.025) --
19074     (-0.25, -0.025) --
19075     ( 0.15, -0.025) --
19076     ( 0.15, -0.075) --
19077     ( 0.25,  0) --
19078     ( 0.15,  0.075) -- cycle;},
19079 }

```



natoapp6c/s/moored

```

19080 \tikzset{%
19081 natoapp6c/s/moored/.pic={
19082     \path[draw] (0,.2) -- (0,-.05) (-.3,-.05) -- (.3,-.05);},
19083 }

```



natoapp6c/s/mortar

```

19084 \tikzset{%
19085 natoapp6c/s/mortar/.pic={
19086     \path[draw] (0,-.15) circle(.05) (0,-.1) -- (0,.2)
19087     ([shift=(225:.1)]0,.2) -- (0,.2) -- ([shift=(-45:.1)]0,.2);},
19088 }

```



natoapp6c/s/motorized

```

19089 \tikzset{%
19090 natoapp6c/s/motorized/.pic={\path[draw] (M.north) -- (M.south);},
19091 pics/natoapp6c/s/motorised/.style={natoapp6c/s/motorized},
19092 }

```



natoapp6c/s/mortuary affairs

```
19093 \tikzset{%
19094   natoapp6c/s/mortuary affairs/.pic={
19095     \path[draw] (-.1,-.2) rectangle (.1,.2)
19096       (0,-.17) -- (0,.17) (-.07,.1) -- (.07,.1)};},
19097 }
```



natoapp6c/s/mountain

```
19098 \tikzset{%
19099   natoapp6c/s/mountain/.pic={
19100     \path[draw,fill=pgfstrokecolor] (0,.2) -- ++(-60:.7) -- ++(180:.7) -- cycle;
19101   },
19102 }
```



natoapp6c/s/naval

```
19103 \tikzset{%
19104   natoapp6c/s/naval/.pic={
19105     \def\arrow{(0,0) -- (-.02,0) -- ++(60:.04) -- ++(-60:.04) -- cycle}
19106     \begin{scope}[pic actions]
19107       \path[draw]
19108         (0,.13) circle (.08) (-.2,.04) -- (.2,.04) (0,.04)
19109         -- (0,-.25) (210:.25) arc (210:340:.25);
19110       \path[draw,shift=(210:.25),rotate=30] \arrow;
19111       \path[draw,shift=(340:.25),rotate=-30] \arrow;
19112     \end{scope}};},
19113 }
```



natoapp6c/s/navigation

```
19114 \tikzset{%
19115   natoapp6c/s/navigation/.pic={
19116     \path[draw]
19117       (.17,-.2) -- (0,.2) -- (-.17,-.2)
19118       ($(-180:.17)+(0,.05)$) arc[radius=.17,start angle=-180,end angle=0]};},
19119 }
```



natoapp6c/s/navy task

```
19120 \tikzset{%
19121   natoapp6c/s/navy task/.pic={
19122     \path[pic actions]
```

```

19123      (-0.25, -0.2) -- (-0.25, 0.1) -- (-0.15, 0.2)
19124      ( 0.25, -0.2) -- ( 0.25, 0.1) -- ( 0.15, 0.2);},
19125 }

```

	natoapp6c/s/non combatant
--	---------------------------

```

19126 \tikzset{%
19127   natoapp6c/s/non combatant/.pic={
19128     \path[draw,fill=pgfstrokecolor]
19129     (-0.25, -0.2) --
19130     (-0.25, 0.05) --
19131     (-0.15, 0.05) --
19132     (-0.15, 0.2) --
19133     (0.15, 0.2) --
19134     (0.15, 0.05) --
19135     (0.25, 0.05) --
19136     (0.25, -0.2) -- cycle;},
19137 }

```

	natoapp6c/s/non lethal weapon
--	-------------------------------

```

19138 \tikzset{%
19139   natoapp6c/s/non lethal weapon/.pic={%
19140     \pic[draw]{natoapp6c/s/weapon};%
19141     \pic[draw]{natoapp6c/s/weapon=non lethal};},
19142 }

```

	natoapp6c/s/nuclear
--	---------------------

```

19143 \tikzset{%
19144   natoapp6c/s/nuclear/.pic={
19145     \path[fill=pgfstrokecolor,pic actions] (0,0) circle(.05)
19146     (0: .3) arc(0 : 60:.3) -- ( 60:.1) arc( 60: 0: .1) -- cycle
19147     (180:.3) arc(180: 120:.3) -- ( 120:.1) arc( 120: 180:.1) -- cycle
19148     (-60:.3) arc(-60:-120:.3) -- (-120:.1) arc(-120:-60: .1) -- cycle;
19149   },
19150 }

```

	natoapp6c/s/observer
--	----------------------

```

19151 \tikzset{%
19152   natoapp6c/s/observer/.pic={
19153     \path[pic actions] (0.25,-.2)--(-.25,-.2)--(0,.2)--cycle;},
19154 }

```



natoapp6c/s/orbiter shuttle

```
19155 \tikzset{%
19156   natoapp6c/s/orbiter shuttle/.pic={
19157     \path[pic actions]
19158       ($(0, 0.3)!0.35!(0.125, -0.15)$) --
19159       (0.125, -0.15) -- (-0.125, -0.15) --
19160       ($(-0.125, -0.15)!0.65!(0, 0.3)$)
19161       to[in=105, out=75] cycle
19162       (0, -0.20) -- (0, -0.15); },
19163 }
```



natoapp6c/s/ordnance

```
19164 \tikzset{%
19165   natoapp6c/s/ordnance/.pic={
19166     \path[draw] (0,0) ellipse(.2 and .15);
19167     \begin{scope}
19168       \clip (0,0) ellipse(.2 and .15) [reverseclip];
19169       \path[draw] (0,0) -- ++(50:.3)
19170         (0,0) -- ++(70:.3)
19171         (0,0) -- ++(110:.3)
19172         (0,0) -- ++(130:.3)
19173         ;
19174     \end{scope}},
19175 }
```



natoapp6c/s/organisation

```
19176 \tikzset{%
19177   pics/natoapp6c/s/organisation/.style={natoapp6c/s/group},
19178 }
```



natoapp6c/s/over snow

```
19179 \tikzset{%
19180   natoapp6c/s/over snow/.pic={
19181     \ifn@to@pp@below%
19182       \draw ([shift={(-.15,.15)}]M.south west) to[in=180, out=270]
19183         ++(.15,-.15) -- (M.south east);
19184     \else%
19185       \draw ([shift={(.3,.1)}]M.west) to[in=180, out=-90]
19186         ([shift={(.5,-.1)}]M.west) --
19187         ([shift={(-.3,-.1)}]M.east);
19188     \fi},
19189 }
```



natoapp6c/s/pack animal

```
19190 \tikzset{%
19191   natoapp6c/s/pack animal/.pic={
19192     \def\n@to@pp@tmp{0}
19193     \ifn@to@pp@below\def\n@to@pp@tmp{-0.15}\fi
19194     \path[draw,shift={(0,\n@to@pp@tmp)}]
19195       (-0.3,-0.15) -- (-0.15,0.15) -- (0,-0.15) -- (0.15,0.15) -- (0.3,-0.15);},
19196 }
```



natoapp6c/s/patrol

```
19197 \tikzset{%
19198   natoapp6c/s/patrol/.pic={
19199     \pic{natoapp6c/s/warfare vessel};
19200     \path[draw,fill=pgfstrokecolor] (0.125, 0) -- (0, 0.2) -- (-0.125, 0) -- cycle;},
19201 }
```



natoapp6c/s/patrolling

```
19202 \tikzset{%
19203   natoapp6c/s/patrolling/.pic={
19204     % OBS
19205     \path[draw]
19206       (0.25, 0.05) -- (-0.05, 0.05) -- (0.05, -0.05) -- (-0.4, -0.05)
19207       (-0.3, 0) -- (-0.4, -0.05) -- (-0.3, -0.1)
19208     node [natoapp6c/text,natoapp6c/small text,
19209       scale=.5,anchor=west,inner sep=0] at (0.25, 0.05) {P};
19210   },
19211 }
```



natoapp6c/s/physician

```
19212 \tikzset{%
19213   natoapp6c/s/physician/.pic={
19214     \pic{natoapp6c/s/medical};
19215     \path[draw] (0.1, 0.05) -- (-0.1, 0.05);},
19216 }
```



natoapp6c/s/pipeline

```
19217 \tikzset{%
19218   natoapp6c/s/pipeline/.pic={
19219     \path[draw] (-0.15,-0.15) rectangle (0.15,0.15)
19220     (-0.3,.1) -- (-0.15,.1) (-0.3,-0.1) -- (-0.15,-0.1)
```

```

19221 (.3,.1) -- (.15,.1) (.3,-.1) -- (.15,-.1)
19222 (-.05,.15) rectangle (.05,.25) (-.1,.25) rectangle (.1,.30);},
19223 }

```



natoapp6c/s/poisoning

```

19224 \tikzset{%
19225   natoapp6c/s/poisoning/.pic={
19226     \path[pic actions] (0, 0.055) circle (0.145)
19227     (0.3, 0) -- (-0.3, -0.2)
19228     (-0.3, 0) -- (0.3, -0.2)};},
19229 }

```



natoapp6c/s/postal

```

19230 \tikzset{%
19231   natoapp6c/s/postal/.pic={
19232     \path[draw] (-.25,.25) -- (.08,.25)
19233     to [out=-90,in=120,looseness=1] (.25,-.25)
19234     to [out=150,in=-90,looseness=1] (-.25,.25);
19235   },
19236 }

```



natoapp6c/s/printed media

```

19237 \tikzset{%
19238   natoapp6c/s/printed media/.pic={
19239     \path[pic actions] (0.2, 0) -- (-0.2, 0)
19240     (0, 0.1) circle (0.085)
19241     (0, -0.1) circle (0.085)};},
19242 }

```



natoapp6c/s/psychological

```

19243 \tikzset{%
19244   natoapp6c/s/psychological/.pic={
19245     \path[pic actions] (-.25,.15) -- (-.1,.15) -- (.1,.25)
19246     -- ++(0,-.5) -- (-.1,-.15) -- (-.25,-.15) -- cycle
19247     (.1,.15) -- (.25,.15)
19248     (.1,.05) -- (.25,.05)
19249     (.1,-.05) -- (.25,-.05)
19250     (.1,-.15) -- (.25,-.15)};},
19251 }

```



natoapp6c/s/quarry

```
19252 \tikzset{%
19253   natoapp6c/s/quarry/.pic={
19254     \path[draw] (-.2,-.2) -- (.18,.18) (.2,-.2) -- (-.18,.18)
19255       (25:.255) arc(25:65:.255)
19256       (115:.255) arc(115:155:.255);
19257     %([shift={(115:.08)}]-.1,.1) arc (115:155:.08)
19258     %([shift={(70:.08)}].1,.1) arc (70:110:.08);
19259   },
19260 }
```



natoapp6c/s/quartermaster

```
19261 \tikzset{%
19262   natoapp6c/s/quartermaster/.pic={
19263     \path[draw] (-.4,.1) -- (.1,.1) (.25,.1) circle(.15)
19264     (-.3,.1) -- (-.3,-.15) (-.15,.1) -- (-.15,-.15)
19265     (-.3,-.08) -- (-.15,-.08);},
19266 }
```



natoapp6c/s/radar

```
19267 \tikzset{%
19268   natoapp6c/s/radar/.pic={%
19269     \path[draw] (-.2,.2) arc (150:300:.25) (-.24,.01) -- (0,.2) --
19270     (0,0) -- (.2,.2);},
19271 }
```



natoapp6c/s/radio

```
19272 \tikzset{%
19273   natoapp6c/s/radio/.pic={%
19274     \path[draw] (-.2,.2) -- (-.13,.25) -- (-.07,.2) -- (0,.25) --
19275     (.07,.2) -- (.13,.25) -- (.2,.2) (0,.25) -- (0,-.05) (0,-.15) circle(.1);},
19276 }
```



natoapp6c/s/radio relay

```
19277 \tikzset{%
19278   natoapp6c/s/radio relay/.pic={%
19279     \path[draw] (-.2,.25) -- (.2,.25) (0,.25) -- (0,-.05) (0,-.15) circle(.1);},
19280 }
```



natoapp6c/s/radio relay line of sight

```

19281 \tikzset{%
19282   natoapp6c/s/radio relay line of sight/.pic={%
19283     \path[draw] (0,0) circle(.2);
19284     \path[fill=pgfstrokecolor] (0,0) -- (45:.2) arc(45:-45:.2) -- cycle;
19285     \path[fill=pgfstrokecolor] (0,0) -- (135:.2) arc(135:225:.2) -- cycle;},
19286 }

```



natoapp6c/s/radio teletype

```

19287 \tikzset{%
19288   natoapp6c/s/radio teletype/.pic={%
19289     \path[draw] (-.2,.25) -- (.2,.25) (-.15,.18) -- (.15,.18)
19290               (0,.25) -- (0,-.25)
19291               ([shift=(30:.1)]0,-.15) arc(30:330:.1);},
19292 }

```



natoapp6c/s/railroad

```

19293 \tikzset{%
19294   natoapp6c/s/railroad/.pic={%
19295     \ifn@to@pp@below%
19296       \path[pic actions] (M.south west) -- (M.south east)
19297       ([shift={(.08,-0.08)}]M.south west) circle(.08)
19298       ([shift={(.24,-0.08)}]M.south west) circle(.08)
19299       ([shift={(-.08,-0.08)}]M.south east) circle(.08)
19300       ([shift={(-.24,-0.08)}]M.south east) circle(.08);
19301     \else
19302       \path[pic actions] (-.45,.08) -- (.45,.08)
19303       (-.37,0) circle(0.08)
19304       (-.21,0) circle(0.08)
19305       (.21,0) circle(0.08)
19306       (.37,0) circle(0.08);
19307     \fi
19308   },
19309 }

```



natoapp6c/s/reconnaissance

```

19310 \tikzset{%
19311   natoapp6c/s/reconnaissance/.pic={%
19312     \path[draw] (M.north east)--(M.south west);},
19313 }
19314 \tikzset{
19315   natoapp6c/s/reconnaissance artillery/.pic={
19316     \path[draw] (M.north east)--(M.south west);,

```

```

19317 \path[pic actions,fill=pgfstrokecolor] circle(0.2);},
19318 }

```



natoapp6c/s/recovery unmanned systems

```

19319 \tikzset{%
19320 natoapp6c/s/recovery unmanned systems/.pic={%
19321 \path[draw] (-.5,.15) to [out=-80,in=180] (0,-.15) to
19322 [out=0,in=260] (.5,.15);},
19323 }

```



natoapp6c/s/rifle

```

19324 \tikzset{%
19325 natoapp6c/s/rifle/.pic={%
19326 \pic[draw]{natoapp6c/s/weapon=full};
19327 \pic[draw]{natoapp6c/s/weapon=rifle};},
19328 }

```



natoapp6c/s/rising

```

19329 \tikzset{%
19330 natoapp6c/s/rising/.pic={
19331 \path[draw,fill=pgfstrokecolor] (0, 0.2) -- (0, -0.167)
19332 (0.1, -0.2) -- (-0.1, -0.2) -- (0, 0.0);},
19333 }

```



natoapp6c/s/riverine

```

19334 \tikzset{%
19335 natoapp6c/s/riverine/.pic={%
19336 \ifn@to@pp@below%
19337 \path[pic actions] (M.south west)
19338 to [out=-90,in=-90,looseness=.5] (M.south east) -- cycle;
19339 \else%
19340 \path[pic actions] (-.5,.15) to [out=-80,in=180] (0,-.15) to
19341 [out=0,in=260] (.5,.15) -- cycle;
19342 \fi},
19343 }

```



natoapp6c/s/rocket launcher

```

19344 \tikzset{%
19345 pics/natoapp6c/s/rocket launcher/.is choice,

```

```

19346 pics/natoapp6c/s/rocket launcher/base/.style={
19347   code={
19348     \pic[draw]{natoapp6c/s/weapon=base};
19349     \pic[draw]{natoapp6c/s/weapon=rifle};
19350     \pic[yshift=-4,draw]{natoapp6c/s/weapon=rifle};
19351   }},
19352 pics/natoapp6c/s/rocket launcher/anti tank/.style={
19353   code={
19354     \pic[draw]{natoapp6c/s/rocket launcher=base};
19355     \pic[draw]{natoapp6c/s/weapon=anti tank};
19356   }},
19357 pics/natoapp6c/s/rocket launcher/single/.style={
19358   code={
19359     \pic[draw]{natoapp6c/s/rocket launcher=base};
19360     \pic[draw]{natoapp6c/s/weapon=bottom};}},
19361 pics/natoapp6c/s/rocket launcher/multiple/.style={
19362   code={
19363     \pic[draw]{natoapp6c/s/rocket launcher=single};
19364     \pic[yshift=-6,draw]{natoapp6c/s/weapon=multi fire};}},
19365 pics/natoapp6c/s/rocket launcher/single head/.style={
19366   code={%
19367     \pic[yshift=4,draw]{natoapp6c/s/weapon=rifle};}},
19368 pics/natoapp6c/s/rocket launcher/multiple head/.style={
19369   code={
19370     \pic[yshift=-4,draw]{natoapp6c/s/weapon=rifle};
19371     \pic[yshift=-6,draw]{natoapp6c/s/weapon=rifle};
19372   }},
19373 pics/natoapp6c/s/rocket launcher/.default=single,
19374 }

```



natoapp6c/s/rotary wing

```

19375 \tikzset{%
19376   natoapp6c/s/rotary wing/.pic={
19377     \path[pic actions]
19378       (0.44, 0.15) -- (0.44, -0.15) -- (-0.44, 0.15) -- (-0.44, -0.15) --
19379       cycle;},
19380 }

```



natoapp6c/s/runway

```

19381 \tikzset{%
19382   natoapp6c/s/runway/.pic={%
19383     \path[draw] (-.3,-.15) -- (.3,-.15) (-.2,-.2) -- (.2,.2);},
19384 }

```



natoapp6c/s/sailing boat

```

19385 \tikzset{%
19386   natoapp6c/s/sailing boat/.pic={%
19387     \path[draw]
19388       (-0.15, -0.2) --
19389       ( 0.15, -0.2) --
19390       ( 0.25, -0.025) --
19391       (-0.25, -0.025) -- cycle
19392       ( 0,    -0.025) -- (0, 0.2)
19393       (0.025, 0)    -- (0.025, 0.19) -- (0.225, 0) -- cycle;},
19394 }

```



natoapp6c/s/satellite

```

19395 \tikzset{%
19396   pics/natoapp6c/s/satellite/.is choice,
19397   pics/natoapp6c/s/satellite/none/.style={
19398     code={
19399       \iftikz@mode@fill
19400       \def\n@to@pp@next{\path[draw,fill=pgfstrokecolor,pic actions]}
19401       \else
19402       \def\n@to@pp@next{\path[pic actions]}
19403       \fi
19404       \n@to@pp@next
19405       ( 0.45, 0.075) rectangle ( 0.15, -0.075)
19406       ( 0.075, 0.075) rectangle (-0.075, -0.075)
19407       (-0.45, 0.075) rectangle (-0.15, -0.075)
19408       ( 0.15, 0) -- (0.075, 0)
19409       (-0.15, 0) -- (-0.075, 0);
19410     }},
19411   pics/natoapp6c/s/satellite/astronomical/.style={
19412     code={
19413       \begingroup\tikz@picmode
19414         \pic{natoapp6c/s/satellite=none};
19415       \endgroup
19416       \path[pic actions]
19417       (0.04, 0.075) rectangle (-0.04, 0.2)
19418       (0.02, -0.075) rectangle (-0.02, -0.2);}},
19419   pics/natoapp6c/s/satellite/bio/.style={
19420     code={
19421       \begingroup\tikz@picmode
19422       \pic[yshift=-1]{natoapp6c/s/satellite=none};
19423       \endgroup
19424       \path[pic actions]
19425       (-0.075, 0.13) circle (0.07)
19426       ($(-0.075, 0.13) + (60:0.07)$) --
19427       ++(-30:0.22) -- ++(0, -0.025) -- (-0.005, 0.13) -- cycle;
19428     }},
19429   pics/natoapp6c/s/satellite/communications/.style={
19430     code={
19431       \begingroup\tikz@picmode
19432       \pic[yshift=-1]{natoapp6c/s/satellite=none};
19433       \endgroup

```

```

19434     \path[pic actions]
19435     (0, 0.075) -- (0, 0.125)
19436     (0, 0.125) arc (270:340:0.25 and 0.1)
19437     (0, 0.125) arc (270:200:0.25 and 0.1);
19438     }},
19439 pics/natoapp6c/s/satellite/navigation/.style={
19440     code={
19441     \beginpgfgroup\tikz@picmode
19442     \pic[yshift=-3.75,scale=.9]{natoapp6c/s/satellite=none};
19443     \endpgfgroup
19444     \pic[scale=.5,yshift=3.5]{natoapp6c/s/navigation};
19445     }},
19446 pics/natoapp6c/s/satellite/earth observing/.style={
19447     code={
19448     \beginpgfgroup\tikz@picmode
19449     \pic[yshift=3.75, scale=0.9]{natoapp6c/s/satellite=none};
19450     \endpgfgroup
19451     \path[pic actions]
19452     (0, 0.065) -- +(315:0.125)
19453     (0, 0.065) -- +(225:0.125)
19454     (0, -0.12) circle (0.08);
19455     }},
19456 pics/natoapp6c/s/satellite/tether/.style={
19457     code={
19458     \beginpgfgroup\tikz@picmode
19459     \pic[yshift=-3.75, scale=0.9]{natoapp6c/s/satellite=none};
19460     \endpgfgroup
19461     \path[pic actions]
19462     (0, -0.066) -- +(30:0.3)
19463     (0, -0.066) +(30:0.375) circle(0.075);
19464     }},
19465 pics/natoapp6c/s/satellite/small/.style={
19466     code={
19467     \beginpgfgroup\tikz@picmode
19468     \pic[scale=0.6]{natoapp6c/s/satellite=none};
19469     \endpgfgroup
19470     \path[pic actions]
19471     (0.05, 0.2) -- ( 0, 0.1) -- (-0.05, 0.2)
19472     (0.05, -0.2) -- ( 0, -0.1) -- (-0.05, -0.2)
19473     (-0.4, 0.05) -- (-0.3, 0) -- (-0.4, -0.05)
19474     ( 0.4, 0.05) -- ( 0.3, 0) -- ( 0.4, -0.05);
19475     }},
19476 pics/natoapp6c/s/satellite/reconnaissance/.style={
19477     code={
19478     \pic[yshift=-1,fill=pgfstrokecolor]{natoapp6c/s/satellite=none};
19479     \path[pic actions]
19480     (-0.075, -0.05) -- +(250:0.1)
19481     (-0.025, -0.05) -- +(260:0.1)
19482     ( 0.025, -0.05) -- +(280:0.1)
19483     ( 0.075, -0.05) -- +(290:0.1);
19484     }},
19485 pics/natoapp6c/s/satellite/.default=none,
19486 }

```



natoapp6c/s/sea mine

```

19487 \tikzset{%
19488   pics/natoapp6c/s/sea mine/.is choice,
19489   pics/natoapp6c/s/sea mine/top half/.style={
19490     code={\path[draw,join=bevel,pic actions]
19491       (.2,0) arc(0:35:.2 and .175) --
19492       (42:.34 and .3) -- (48:.34 and .3) --
19493       % ($(45:.1) + (40:.2)$) -- ($(45:.1)+(50:.2)$) --
19494       (55:.2 and .175) arc(50:75:.2 and .175) --
19495       (80:.26 and .23) -- (100:.26 and .23) --
19496       (105:.2 and .175) arc(100:125:.2 and .175) --
19497       (132:.34 and .3) -- (138:.34 and .3) --
19498       % ($(135:.1)+(130:.2)$) -- ($(135:.1)+(140:.2)$) --
19499       (145:.2 and .175) arc(145:180:.2 and .175);
19500     }},
19501   pics/natoapp6c/s/sea mine/bottom half/.style={
19502     code={
19503       \path[pic actions] (.2,0) arc(0:-180:.2);}},
19504   pics/natoapp6c/s/sea mine/full/.style={
19505     code={
19506       \pic[fill=pgfstrokecolor]{natoapp6c/s/sea mine/top half};
19507       \pic[fill=pgfstrokecolor]{natoapp6c/s/sea mine/bottom half};}},
19508   pics/natoapp6c/s/sea mine/neutralised/.style={
19509     code={
19510       \begin{scope}[even odd rule]
19511         \clip [rotate=42] (-.4,-.015) rectangle (.4,.015) [reverseclip];
19512         \clip [rotate=-42] (-.4,-.015) rectangle (.4,.015) [reverseclip];
19513         \pic {natoapp6c/s/sea mine=full};
19514       \end{scope}
19515     }},
19516   pics/natoapp6c/s/sea mine/neutralized/.style=natoapp6c/s/sea mine/neutralised,
19517   pics/natoapp6c/s/sea mine/.default=full,
19518 }

```



natoapp6c/s/seabed installation

```

19519 \tikzset{%
19520   natoapp6c/s/seabed installation/.pic={%
19521     \path[pic actions]
19522     (-0.25, -0.2) --
19523     ( 0.25, -0.2) --
19524     ( 0.25, -0.075) --
19525     ( 0.05, -0.075) --
19526     ( 0.05,  0.025) --
19527     (-0.125, 0.025) --
19528     (-0.125, 0.2) --
19529     (-0.25,  0.2) -- cycle;},
19530 }

```



natoapp6c/s/search

```
19531 \tikzset{%
19532   natoapp6c/s/search/.pic={%
19533     \path[draw] (-.3,-.2)--(0,-.4)--(.3,-.2) (0,.4)--(0,-.4);},
19534 }
```



natoapp6c/s/searching

```
19535 \tikzset{%
19536   natoapp6c/s/searching/.pic={%
19537     \path[pic actions]
19538       (-0.4, 0)
19539       arc (180:0:0.1)
19540       arc (180:360:0.1)
19541       arc (180:0:0.1)
19542       arc (180:270:0.1) -- +(0.1, 0)
19543       (0.3, -0.05) -- (0.4, -0.1) -- (0.3, -0.15);},
19544 }
```



natoapp6c/s/semi trailer truck

```
19545 \tikzset{%
19546   natoapp6c/s/semi trailer truck/.pic={
19547     \pic[scale=.75,xshift=-2,draw]{natoapp6c/s/utility vehicle};
19548     \path[pic actions] (0.21, -0.025) -- (0.35, -0.025)
19549     (0.35, 0.05) -- (0.35, -0.1);},
19550 }
```



natoapp6c/s/sensor

```
19551 \tikzset{%
19552   natoapp6c/s/sensor/.pic={%
19553     \path[fill=pgfstrokecolor] (-.3,0) arc (270:360:.3) arc (180:270:.3) arc
19554     (90:180:.3) arc (0:90:.3);},
19555 }
```



natoapp6c/s/ship

```
19556 \tikzset{%
19557   natoapp6c/s/ship/.pic={%
19558     \path[pic actions]
19559     (-0.2, -0.2) --
19560     ( 0.2, -0.2) --
```

```

19561 ( 0.35, 0.05) --
19562 ( 0.15, 0.05) --
19563 ( 0.15, 0.2) --
19564 (-0.15, 0.2) --
19565 (-0.15, 0.05) --
19566 (-0.35, 0.05) --
19567 cycle;},
19568 }

```



natoapp6c/s/signal

```

19569 \tikzset{%
19570 natoapp6c/s/signal/.pic={%
19571 \path[draw] (M.north west) -- (0,-.1) -- (0,.1) -- (M.south east);},
19572 }

```



natoapp6c/s/signals intelligence

```

19573 \tikzset{%
19574 natoapp6c/s/signals intelligence/.pic={%
19575 \path[draw] (-.2,.2) -- (-.13,.25) -- (-.07,.2) -- (0,.25) --
19576 (.07,.2) -- (.13,.25) -- (.2,.2) (0,.25) -- (0,-.2);},
19577 }

```



natoapp6c/s/ski

```

19578 \tikzset{%
19579 natoapp6c/s/ski/.pic={
19580 \path[draw] (-.15,-.15) -- (.1,.2) (.15,-.15) -- (-.1,.2)
19581 (-.1,-.2) -- (-.2,-.1)
19582 (.1,-.2) -- (.2,-.1);
19583 },
19584 }

```



natoapp6c/s/sled

```

19585 \tikzset{%
19586 natoapp6c/s/sled/.pic={
19587 \ifn@to@pp@below%
19588 \draw ([shift={(-.15,.15)}]M.south west) to[in=180, out=-90]
19589 ++(.15,-.15) -- (M.south east) to[in=-90, out=0]
19590 ([shift={(.15,.15)}]M.south east);
19591 \else%
19592 \draw ([shift={(.3,.1)}]M.west) to[in=180, out=-90]
19593 ([shift={(.5,-.1)}]M.west) --
19594 ([shift={(-.5,-.1)}]M.east) to[in=-90, out=0]

```

```

19595      ([shift={(-.3,.1)}]M.east);
19596      \fi
19597      },
19598 }

```



natoapp6c/s/small squashed text

```

19599 \tikzset{%
19600   pics/natoapp6c/s/small squashed text/.style={
19601     code={\n@to@pp@text@smallsquashed{#1};}},
19602 }

```



natoapp6c/s/small text

```

19603 \tikzset{%
19604   pics/natoapp6c/s/small text/.style={code={\n@to@pp@text@small{#1};}},
19605 }

```



natoapp6c/s/sniper

```

19606 \tikzset{%
19607   natoapp6c/s/sniper/.pic={%
19608     \path[draw] (-.2,.2)--(-.05,.2) (.05,.2)--(.2,.2) (0,.15)--(0,-.2);},
19609 }

```



natoapp6c/s/space station

```

19610 \tikzset{%
19611   natoapp6c/s/space station/.pic={
19612     \path[join=bevel,pic actions]
19613     (-80:.15 and .06) -- (0.025, 0.175) arc(0:180:0.025) -- (-100:.15 and .06)
19614     ($(80:.25 and 0.1)+(0,-.0125)$) arc(80:-260:.25 and .1) --
19615     (-260:.15 and .06) arc (-260:80:.15 and .06) -- cycle
19616     (-82:.25 and .1) -- (0.025, -0.175) arc(360:180:0.025) -- (-98:.25 and .1);
19617   },
19618 }

```



natoapp6c/s/squashed text

```

19619 \tikzset{%
19620   pics/natoapp6c/s/squashed text/.style={code={\n@to@pp@text@squashed{#1};}},
19621 }

```



natoapp6c/s/submarine

```
19622 \tikzset{%
19623   natoapp6c/s/submarine/.pic={
19624     \path[fill=pgfstrokecolor,pic actions]
19625       (0.4, 0) --
19626       (0.25, 0.15) --
19627       (-0.25, 0.15) --
19628       (-0.4, 0) --
19629       (-0.25, -0.15) --
19630       (0.25, -0.15) -- cycle;},
19631 }
```



natoapp6c/s/submersible

```
19632 \tikzset{%
19633   natoapp6c/s/submersible/.pic={
19634     \path[pic actions]
19635       ($(0, -0.05) + (106.6:0.35 and 0.15)$)
19636       arc (106.6:433.4:0.35 and 0.15) |- (0, 0.2) -| cycle;
19637   },
19638 }
```



natoapp6c/s/supply

```
19639 \tikzset{%
19640   natoapp6c/s/supply/.pic={
19641     \path[pic actions]
19642       ($(M.east)-(0,.25)$)--($(M.west)-(0,.25)$);},
19643 }
```



natoapp6c/s/surface combatant

```
19644 \tikzset{%
19645   natoapp6c/s/surface combatant/.pic={
19646     \pic {natoapp6c/s/warfare vessel};
19647     \path[draw,fill=pgfstrokecolor]
19648       (0.12, 0.05) --
19649       (0.12, 0.14) --
19650       (0.06, 0.14) --
19651       (0.06, 0.2) --
19652       (0.24, 0.2) --
19653       (0.24, 0.272) --
19654       (0.06, 0.272) --
19655       (0.06, 0.35) --
19656       (-0.06, 0.35) --
19657       (-0.06, 0.272) --
```

```

19658 (-0.24, 0.272) --
19659 (-0.24, 0.2) --
19660 (-0.06, 0.2) --
19661 (-0.06, 0.14) --
19662 (-0.12, 0.14) --
19663 (-0.12, 0.05) -- cycle;},
19664 }

```



natoapp6c/s/survey

```

19665 \tikzset{%
19666   natoapp6c/s/survey/.pic={
19667     \path[draw,fill=pgfstrokecolor,pic actions]
19668       (0, -0.1) -- (0, 0.195) -- (0.25, 0.0475) -- cycle;
19669     \path[pic actions] (0.1, -0.2) -- (0, -0.1) -- (-0.1, -0.2);},
19670 }

```



natoapp6c/s/tactical satellite

```

19671 \tikzset{%
19672   natoapp6c/s/tactical satellite/.pic={
19673     \path[fill=pgfstrokecolor,draw]
19674       (-.3,-.2) rectangle(-.15,.2)
19675       (.15,-.2) rectangle( .3,.2)
19676       (-.075,-.15) rectangle (.075,.15)
19677       (-.15,0) -- (.15,0)
19678       (0,-.15) -- (0,-.3);
19679     \path[draw] (-.2,-.35) to [out=40,in=140,looseness=1] (.2,-.35);},
19680 }

```



natoapp6c/s/tank

```

19681 \tikzset{%
19682   natoapp6c/s/tank/.pic={%
19683     \pic[draw]{natoapp6c/s/vehicle};
19684     \path[pic actions] ( 0.35, 0.2) -- (-0.35, 0.2);},
19685 }

```



natoapp6c/s/text

```

19686 \tikzset{%
19687   pics/natoapp6c/s/text/.style={code={%
19688     \n@to@pp@dbg{3}{Text: '#1'}%
19689     \n@to@pp@text@normal{#1};}},
19690 }

```



natoapp6c/s/topographic

```
19691 \tikzset{%
19692   natoapp6c/s/topographic/.pic={
19693     \path[draw] (0,.05) -- (0,.2)
19694       (0,.05) -- (-.1,-.2)
19695       (0,.05) -- (.1,-.2)
19696       (-30:.15) arc[radius=.15,start angle=-30,end angle=-150];},
19697 }
```



natoapp6c/s/torpedo

```
19698 \tikzset{%
19699   natoapp6c/s/torpedo/.pic={
19700     \path[draw,fill=pgfstrokecolor,pic actions]
19701       (-0.35, 0) --
19702       (-0.3, 0.075) --
19703       ( 0.25, 0.075) --
19704       ( 0.35, -0.075) --
19705       ( 0.35, 0.075) --
19706       ( 0.25, -0.075) --
19707       (-0.3, -0.075) -- cycle;},
19708 }
```



natoapp6c/s/towed

```
19709 \tikzset{%
19710   natoapp6c/s/towed/.pic={
19711     \ifn@to@pp@below%
19712       \path[pic actions] (M.south east) -- (M.south west)
19713       ([shift={(.08,0)}]M.south east) circle(.08)
19714       ([shift={(-.08,0)}]M.south west) circle(.08);
19715     \else%
19716       \path[draw] (-.32,0) -- (.32,0) (-.4,0) circle(.08) (.4,0) circle(.08);%
19717     \fi},
19718 }
```



natoapp6c/s/tracked

```
19719 \tikzset{%
19720   natoapp6c/s/tracked/.pic={
19721     \ifn@to@pp@below%
19722       \path[pic actions]
19723       ([shift={(.08,-.16)}]M.south west)
19724       arc [radius=.08,start angle=-90,end angle=-270]
19725       -- ([shift={(-.08,0)}]M.south east)
```

```

19726     arc [radius=.08,start angle=90,end angle=-90]
19727     -- cycle;
19728     \else%
19729     \path[pic actions]
19730     (-.3,-.1) arc [radius=.1,start angle=-90,end angle=-270]
19731     -- (.3,.1) arc [radius=.1,start angle=90,end angle=-90]
19732     -- cycle;
19733     \fi},
19734 }

```



natoapp6c/s/train locomotive

```

19735 \tikzset{%
19736   natoapp6c/s/train locomotive/.pic={
19737     \path[pic actions]
19738     (.35,-.3)--(-.35,-.3)--(-.35,.3)--(0,.3)--(0,0)--(0.35,0)--cycle;},
19739 }

```



natoapp6c/s/transportation

```

19740 \tikzset{%
19741   natoapp6c/s/transportation/.pic={
19742     \path[pic actions] (0,0) circle(.2)
19743     (180:.2) -- (0:.2)
19744     (225:.2) -- (45:.2)
19745     (270:.2) -- (90:.2)
19746     (315:.2) -- (135:.2) ;},
19747 }

```



natoapp6c/s/unexploded ordnance

```

19748 \tikzset{%
19749   natoapp6c/s/unexploded ordnance/.pic={
19750     \begin{scope}[transparency group=knockout]
19751       \path[draw,fill=pgfstrokecolor,pic actions] (0,0) circle(.2);
19752       \pic[opacity=0]{natoapp6c/s/small squashed text=UXO};
19753     \end{scope}},
19754 }

```



natoapp6c/s/unmanned

```

19755 \tikzset{%
19756   natoapp6c/s/unmanned/.pic={
19757     \path[pic actions]
19758     (0,-0.1)
19759     --(0.45,0.05)

```

```

19760    --(0.45,0.1)
19761    --(0,0.025)
19762    --(-0.45,0.1)
19763    --(-0.45,0.05)
19764    --cycle;},
19765 }

```



natoapp6c/s/utility vehicle

```

19766 \tikzset{%
19767   natoapp6c/s/utility vehicle/.pic={%
19768     \pic[draw]{natoapp6c/s/vehicle};
19769     \path[pic actions]
19770     (0.35, 0.3) to[in=-90, out=-90, looseness=1] (-0.35, 0.3); },
19771 }

```



natoapp6c/s/vehicle

```

19772 \tikzset{%
19773   natoapp6c/s/vehicle/.pic={
19774     \path[pic actions]
19775     (-0.35, 0.2) -- (-0.35, -0.2) -- ( 0.35, -0.2) -- ( 0.35, 0.2)
19776     (-0.35, -0.2) -- (-0.35, -0.3)
19777     (0.35, -0.2) -- ( 0.35, -0.3)
19778     (-0.35, 0.2) -- (-0.35, 0.3)
19779     (0.35, 0.2) -- ( 0.35, 0.3);}
19780 }

```



natoapp6c/s/video imagery

```

19781 \tikzset{%
19782   natoapp6c/s/video imagery/.pic={
19783     \path[pic actions]
19784     (-0.4, 0.2) -- (-0.4, -0.2) -- (0.05, -0.2) -- (0.2, 0.2) -- cycle
19785     (0.075, -0.15) -- (0.4, -0.15)
19786     (0.16, 0.1) -- (0.4, 0.1);
19787     \path[draw,fill=pgfstrokecolor,pic actions](0.38,-.2) rectangle (0.42,.15);},
19788 }

```



natoapp6c/s/warfare vessel

```

19789 \tikzset{%
19790   natoapp6c/s/warfare vessel/.pic={
19791     \path[draw,fill=pgfstrokecolor] (0, -0.2) -- (0.3, 0.05) -- (-0.3, 0.05) -- cycle;},
19792 }

```



natoapp6c/s/water

```

19793 \tikzset{%
19794   natoapp6c/s/water/.pic={
19795     \path[pic actions]
19796       (-0.3, 0.05) -- (0, 0.05) to[in=90, out=0] (0.3, -0.2)
19797       (0, 0.05) -- (0, 0.2)
19798       (0.075, 0.2) -- (-0.075, 0.2)};},
19799 }

```



natoapp6c/s/wheeled

```

19800 \tikzset{%
19801   pics/natoapp6c/s/wheeled/.is choice,
19802   pics/natoapp6c/s/wheeled/and tracked/.style={
19803     code={
19804       \ifn@to@pp@below%
19805         \path[pic actions]
19806           ([shift={(.4,-.16)}]M.south west)
19807           arc [radius=.08,start angle=-90,end angle=-270]
19808           -- ([shift={(-.08,0)}]M.south east)
19809           arc [radius=.08,start angle=90,end angle=-90]
19810           -- cycle
19811           ([shift={(.08,-.08)}]M.south west) circle(.08);
19812       \else%
19813         \path[pic actions]
19814           (-.1,-.08) arc [radius=.08,start angle=-90,end angle=-270]
19815           -- (.32,.08) arc [radius=.08,start angle=90,end angle=-90]
19816           -- cycle
19817           (-.4,0) circle(0.08);
19818       \fi}},
19819   pics/natoapp6c/s/wheeled/limited/.style={
19820     code={
19821       \ifn@to@pp@below%
19822         \path[pic actions] (M.south west) -- (M.south east)
19823           ([shift={(.08,-.08)}]M.south west) circle(.08)
19824           ([shift={(-.08,-.08)}]M.south east) circle(.08);
19825       \else
19826         \path[pic actions] (-.4,.08) -- (.4,.08)
19827           (-.32,0) circle(0.08) (.32,0) circle(0.08);
19828       \fi}},
19829   pics/natoapp6c/s/wheeled/cross country/.style={
19830     code={\pic{natoapp6c/s/wheeled=limited};
19831       \ifn@to@pp@below%
19832         \path[pic actions] ([shift={(0,-.08)}]M.south) circle(.08);
19833       \else
19834         \path[pic actions] (0,0) circle(0.08);
19835       \fi}},
19836   pics/natoapp6c/s/wheeled/semi/.style={
19837     code={\pic{natoapp6c/s/wheeled=limited};

```

```

19838 \ifn@to@pp@below%
19839 \path[pic actions] ([shift={(.24,-.08)}]M.south west) circle(.08);
19840 \else
19841 \path[pic actions] (-.16,0) circle(0.08);
19842 \fi}},
19843 pics/natoapp6c/s/wheeled/.default=limited,
19844 }

```

5.6.22 Some extra MIL-STD symbols

Extra NATO App6(c) symbol (from MIL-STD)

	natoapp6c/s/prison
---	--------------------

```

19845 \tikzset{%
19846 natoapp6c/s/prison/.pic={
19847 \path[pic actions] (-.3,-.3)rectangle(.3,.3)
19848 (-.23,-.30)--(-.23,.3)
19849 (.23,-.30)--(.23,.3)
19850 (-.08,-.30)--(-.08,-.2)
19851 (-.08,-.15) circle (.05)
19852 (-.08,-.1) --(-.08,.3)
19853 (.08,-.30)--(.08,-.2)
19854 (.08,-.15) circle (.05)
19855 (.08,-.1) --(.08,.3)
19856 (0,.15) circle(.07 and .1);
19857 },
19858 }

```

5.6.23 Some Kriegspiel-like symbols

Now some symbols. We do not define a whole lot, since we do not need that for Kriegspiel-like counters.

```

19859 \tikzset{
19860 pics/kriegspiel/s/.unknown/.code={
19861 \message{^^JTry regular 'natoapp6c/s/\pgfkeyscurrentname'}
19862 % \pic[pic actions,draw=black]{natoapp6c/s/\pgfkeyscurrentname};
19863 \pgfkeysalso{/tikz/pics/natoapp6c/s/\pgfkeyscurrentname/.try}
19864 },
19865 ks debug frame/.style={
19866 draw=none,
19867 %draw=magenta,
19868 %dashed,
19869 },
19870 kriegspiel/s/infantry/.pic={
19871 \coordinate(a) at (M.south west);
19872 \coordinate(b) at ($(M.north east)+(0,-.2)$);
19873 \@ifundefinedcolor{pgffillcolor}{-}{
19874 \path[fill=pgffillcolor](a)rectangle(b);}
19875 \path[pic actions,fill=none](a)rectangle(b);
19876 \path[pic actions,fill=none](a)--(b);

```

```

19877 \path[pic actions,fill=None] let
19878 \p1=(a),\p2=(b) in (\x2,\y1)--(\x1,\y2);
19879 \path[fill=pgfstrokecolor] let
19880 \p2=(b) in (-.05,\y2)rectangle++(.1,.2);
19881 \draw[ks debug frame](M.south west)rectangle(M.north east);
19882 },
19883 kriegspiel/s/reconnaissance/.pic={
19884 \coordinate(a) at (M.south west);
19885 \coordinate(b) at ($(M.north east)+(0,-.2)$);
19886 \@ifundefinedcolor{pgffillcolor}{\{
19887 \path[fill=pgffillcolor](a)rectangle(b);}
19888 \path[pic actions,fill=None](a)rectangle(b);
19889 \path[fill=pgfstrokecolor](a)--(b)--(a|b)--cycle;
19890 \path[fill=pgfstrokecolor] let
19891 \p2=(b) in
19892 (-.05,\y2)---+(0,.2)---+(-10:.4)---+(-170:.3)--(.05,\y2)--cycle;
19893 \draw[ks debug frame](M.south west)rectangle(M.north east);
19894 },
19895 kriegspiel/s/artillery/.pic={
19896 \coordinate(a) at (M.south west);
19897 \coordinate(b) at ($(M.north east)+(0,-.5)$);
19898 \@ifundefinedcolor{pgffillcolor}{\{
19899 \path[fill=pgffillcolor](a)rectangle(b);}
19900 \path[pic actions,fill=None](a)rectangle(b);
19901 %\path[pic actions](a)rectangle(b);
19902 \foreach \s in {-.8,0,.8}{
19903 \path[fill=pgfstrokecolor] let
19904 \p2=(b),%
19905 \n1={\y2+\pgflinewidth} in
19906 (\s-.04,\y2)rectangle++(.08,.5)
19907 ($(\s-.18,\n1)+(0,.05)$)rectangle++(.08,.2)
19908 ($(\s+.18,\n1)+(0,.05)$)rectangle++(-.08,.2);
19909 }
19910 \draw[ks debug frame](M.south west)rectangle(M.north east);
19911 },
19912 kriegspiel/s/reconnaissance artillery/.pic={
19913 \coordinate(a) at (M.south west);
19914 \coordinate(b) at ($(M.north east)+(0,-.5)$);
19915 \@ifundefinedcolor{pgffillcolor}{\{
19916 \path[fill=pgffillcolor](a)rectangle(b);}
19917 \path[pic actions,fill=None](a)rectangle(b);
19918 %\path[pic actions](a)rectangle(b);
19919 \path[fill=pgfstrokecolor](a)--(b)--(a|b)--cycle;
19920 \foreach \s in {-.8,0,.8}{
19921 \path[fill=pgfstrokecolor] let
19922 \p2=(b),%
19923 \n1={\y2+\pgflinewidth} in
19924 (\s-.04,\y2)rectangle++(.08,.5)
19925 ($(\s-.18,\n1)+(0,.05)$)rectangle++(.08,.2)
19926 ($(\s+.18,\n1)+(0,.05)$)rectangle++(-.08,.2);
19927 }
19928 \draw[ks debug frame](M.south west)rectangle(M.north east);
19929 }

```

19930 }
19931

\n@to@pp@s@ll

A list of all defined symbols

```
19932 \def\n@to@pp@s@ll{
19933   weapon=base,
19934   weapon=top,
19935   weapon=bottom,
19936   weapon=rifle,
19937   weapon=machine gun,
19938   weapon=grenade launcher,
19939   weapon=missile launcher,
19940   weapon=non lethal,
19941   weapon=multi fire,
19942   weapon=air defence,
19943   weapon=anti tank,
19944   weapon=full,
19945   weapon,
19946   type=light,
19947   type=medium,
19948   type=heavy,
19949   type=vlight,
19950   type=vmedium,
19951   type=vheavy,
19952   type,
19953   above corps support,
19954   air assault with organic lift,
19955   air decoy,
19956   air assault,
19957   air defence,
19958   air strip,
19959   air traffic,
19960   airship,
19961   airborne,
19962   ammunition,
19963   amphibious,
19964   amphibious warfare ship,
19965   analysis,
19966   arrest,
19967   artillery,
19968   anti tank anti armour,
19969   antenna,
19970   armoured,
19971   armoured fighting vehicle,
19972   armoured personnel carrier,
19973   arctic,
19974   automobile,
19975   balloon,
19976   bar,
19977   base,
19978   bicycle equipped,
```

19979 boat,
19980 booby trap,
19981 bottomed,
19982 bridge=none,
19983 bridge=fixed,
19984 bridge=folding,
19985 bridge=hollow,
19986 bridge,
19987 capsule,
19988 carrier,
19989 chemical biological radiological nuclear,
19990 civilian military cooperation,
19991 civilian police,
19992 civilian telecommunications,
19993 coast guard vessel,
19994 combat support,
19995 combatant,
19996 combined arms,
19997 computer system,
19998 control,
19999 convoy,
20000 corps support,
20001 crime,
20002 decoy,
20003 direct communications,
20004 direction finding,
20005 diving=none,
20006 diving=military,
20007 diving,
20008 drilling,
20009 earthmover,
20010 electric power,
20011 electronic ranging,
20012 electronic warfare wide,
20013 engineer,
20014 enhanced location reporting system,
20015 environmental protection,
20016 explosion,
20017 finance,
20018 fishing vessel,
20019 fire protection,
20020 fixed and rotary wing,
20021 fixed wing,
20022 flame thrower,
20023 floating,
20024 surfaced,
20025 food,
20026 fuel,
20027 grenade launcher=none,
20028 grenade launcher=non lethal,
20029 grenade launcher,
20030 graffiti,
20031 group,

20032 gun=base,
20033 gun=air defence,
20034 gun=anti tank,
20035 gun=direct,
20036 gun=recoilless,
20037 gun,
20038 headquarters,
20039 house,
20040 howitzer,
20041 in position,
20042 individual,
20043 infantry,
20044 intermodal,
20045 jagged wave,
20046 jam,
20047 jamming,
20048 jetski,
20049 killing,
20050 labour,
20051 land mine=personnel,
20052 land mine=tank,
20053 land mine=none,
20054 land mine,
20055 land missile,
20056 laser,
20057 launcher,
20058 laundry,
20059 machine gun,
20060 main gun,
20061 maintenance,
20062 medic,
20063 medical,
20064 medical treatment,
20065 mine,
20066 mine clearing equipment,
20067 mine warfare vessel,
20068 missile,
20069 missile launcher=base,
20070 missile launcher=none,
20071 missile launcher=air defence,
20072 missile launcher=anti tank,
20073 missile launcher=surface to surface,
20074 missile launcher,
20075 mobile advisor and support,
20076 moored,
20077 mortar,
20078 motorized,
20079 mortuary affairs,
20080 mountain,
20081 naval,
20082 navigation,
20083 navy task,
20084 non combatant,

20085 non lethal weapon,
20086 nuclear,
20087 observer,
20088 orbiter shuttle,
20089 ordnance,
20090 organisation,
20091 over snow,
20092 pack animal,
20093 patrol,
20094 patrolling,
20095 physician,
20096 pipeline,
20097 poisoning,
20098 postal,
20099 printed media,
20100 psychological,
20101 quarry,
20102 quartermaster,
20103 radar,
20104 radio,
20105 radio relay,
20106 radio relay line of sight,
20107 radio teletype,
20108 railroad,
20109 reconnaissance,
20110 recovery unmanned systems,
20111 rifle,
20112 rising,
20113 riverine,
20114 rocket launcher=base,
20115 rocket launcher=anti tank,
20116 rocket launcher=single,
20117 rocket launcher=multiple,
20118 rocket launcher=single head,
20119 rocket launcher=multiple head,
20120 rocket launcher,
20121 rotary wing,
20122 runway,
20123 sailing boat,
20124 satellite=none,
20125 satellite=astronomical,
20126 satellite=bio,
20127 satellite=communications,
20128 satellite=navigation,
20129 satellite=earth observing,
20130 satellite=tether,
20131 satellite=small,
20132 satellite=reconnaissance,
20133 satellite,
20134 sea mine=top half,
20135 sea mine=bottom half,
20136 sea mine=full,
20137 sea mine=neutralised,

20138 sea mine=neutralized,
20139 sea mine,
20140 seabed installation,
20141 search,
20142 searching,
20143 semi trailer truck,
20144 sensor,
20145 ship,
20146 signal,
20147 signals intelligence,
20148 ski,
20149 sled,
20150 small squashed text=TXT,
20151 small text=TXT,
20152 sniper,
20153 space station,
20154 squashed text=TXT,
20155 submarine,
20156 submersible,
20157 supply,
20158 surface combatant,
20159 survey,
20160 tactical satellite,
20161 tank,
20162 text=TXT,
20163 topographic,
20164 torpedo,
20165 towed,
20166 tracked,
20167 train locomotive,
20168 transportation,
20169 unexploded ordnance,
20170 unmanned,
20171 utility vehicle,
20172 vehicle,
20173 video imagery,
20174 warfare vessel,
20175 water,
20176 wheeled=and tracked,
20177 wheeled=limited,
20178 wheeled=cross country,
20179 wheeled=semi,
20180 wheeled
20181 }

A Generate draft VASSAL module

We can use the code you wrote for your game pieces (counters, maps, tables), to generate a draft VASSAL module. To that end, use the document class `wgexport`, and some simple macros to export your graphics to a single PDF. A provided Python script then processes this to generate the draft VASSAL module.

The generated VASSAL module is not the final thing, but it is a good start.

A.1 Example

Suppose we have defined counters and markers like

```
allied 1 id      axis 1 ad      out of supply
allied 2 ad      axis 2 ad      game turn
allied 3 abid    axis 3 ic
```

via Tikz styles. Also assume that we have macros

```
\board  \oob  \charts  \front
```

which produces tikzpictures to the board, OOBs, charts, and cover, respectively. All this is defined in our package `mygame`. Of course that we have our rules in the file `game.pdf`.

We prepare a simple L^AT_EX source file

```
\documentclass{wgexport}
\usepackage{mygame}
\begin{document}
\begin{imagelist} %% Records image meta info
  \chitimages{%
    {allied 1 id,allied 2 ad,allied 3 abid}/Allied,%
    {axis 1 ad,axis 2 ad,axis 3 ic}/Axis,%
    {out of supply, game turn}/Markers}}
  \info{Board}{board}{} \board
  \info{OOB}{oob}{} \oob
  \info{Charts}{chart}{} \chart
  \info{Cover}{front}{} \front
\end{imagelist}
\end{document}
```

When we run L^AT_EX on this, we will get a PDF where each page is a separate image and the page is cropped to image. *In addition* we will get a CSV (comma-separated-values) file `export.csv` which contains some meta information about each page. In particular, it identifies the name of each page, the category, and sub category of the image.

For chits, the name of the image is the style name (e.g., `game turn`). For other images, it is the first argument to `\info` above.

The category is for chits is always `counter`. For other images, it is the second argument to the `\info` macro (e.g., `board`).

The category of an image is important later on when we generate the VASSAL module. Recognised categories are

- `counter` for counter images. Such an image will trigger the creation of a VASSAL game piece.
- `board` for board images. Images of this kind will result in VASSAL board (or Map) elements.
- `oob` for Order of Battle tables. This will also result in a VASSAL map being created, but one that is displayed as a pop-up and with a rectangular grid. This is useful for placing units in an Order of Battle chart.

- **chart** for charts. These images will be made VASSAL charts — i.e., pop-up windows which contains some graphics for the players reference.
- **front** for the cover image. This will become the module splash image. Only one such image (the first) will be used.

Other categories may be used, and the corresponding image will be added to the VASSAL module. However, they will no be processed in any specific way.

The *sub-category* is mainly used for counters. Above, we gave the sub-categories **Allied**, **Axis**, and **Markers**. The sub-categories will help to identify the factions of the game, and counter prototypes will be made for each category. The sub-categories of **board**, **charts**, **oob**, and **front** has no or little effect.

One we have processed the file above to generate our PDF (Say `export.pdf`), then we can process it (and the CSV file) with a Python script to make our draft VASSAL module

```
export.py export.pdf export.csv -o Game.vmod -t Game -v 0.1 \
  -d "My game" -r rules.pdf
```

This will generate the draft module `Game.vmod`. Note that we add the rules (`-r rules.pdf`) to the module so that the module is complete.

Once the module has been generated, one can open it in the VASSAL editor and further customise it. For example, the grids used in the boards needs to be adjusted, and one may want to make initial set-ups or add all counters to the OOB.

Of course, running the Python script will overwrite all changes, so perhaps it is a good idea to work on a copy of the output file.

Index

Numbers written in italic refer to the page where the corresponding entry is described; numbers underlined refer to the code line of the definition; numbers in roman refer to the code lines where the entry is used.

Symbols			
<code>/chit/bevel (key)</code>	14398	<code>/hex/ridges (key)</code>	1462
<code>/chit/extra (key)</code>	14398	<code>/hex/terrain (key)</code>	1462
<code>/chit/factors (key)</code>	14398	<code>/hex/town (key)</code>	1462
<code>/chit/full (key)</code>	14398	<code>/natoapp6c (key)</code>	17623
<code>/chit/id (key)</code>	14398	<code>/tikz/chit (key)</code>	14468
<code>/chit/left (key)</code>	14398	<code>/tikz/chit/1 factor (key)</code> ..	14969
<code>/chit/lower left (key)</code>	14398	<code>/tikz/chit/2 factors (key)</code> ..	14969
<code>/chit/lower right (key)</code>	14398	<code>/tikz/chit/3 factors (key)</code> ..	14969
<code>/chit/right (key)</code>	14398	<code>/tikz/chit/4 factors (key)</code> ..	14969
<code>/chit/setup (key)</code>	14398	<code>/tikz/chit/factor (key)</code>	14969
<code>/chit/symbol (key)</code>	14398	<code>/tikz/chit/factors (key)</code>	14433
<code>/chit/upper left (key)</code>	14398	<code>/tikz/chit/full (key)</code>	14433
<code>/chit/upper right (key)</code>	14398	<code>/tikz/chit/id (key)</code>	14433
<code>/hex/extra (key)</code>	1462	<code>/tikz/chit/identifier (key)</code>	14969
<code>/hex/extra clipped (key)</code>	1462	<code>/tikz/chit/left (key)</code>	14433
<code>/hex/label (key)</code>	1462	<code>/tikz/chit/lower left (key)</code>	14433
		<code>/tikz/chit/lower right (key)</code>	14433
		<code>/tikz/chit/right (key)</code>	14433
		<code>/tikz/chit/setup (key)</code>	14433
		<code>/tikz/chit/small identifier (key)</code>	14969
		<code>/tikz/chit/symbol (key)</code>	14433
		<code>/tikz/chit/upper left (key)</code>	14433
		<code>/tikz/chit/upper right (key)</code>	14433
		<code>/tikz/natoapp6c (key)</code>	17715
		<code>/tikz/natoapp6c/below (key)</code>	17700
		<code>/tikz/natoapp6c/echelon (key)</code>	17700
		<code>/tikz/natoapp6c/left (key)</code>	17700
		<code>/tikz/natoapp6c/lower (key)</code>	17700
		<code>/tikz/natoapp6c/main (key)</code>	17700
		<code>/tikz/natoapp6c/modifiers (key)</code>	17700
		<code>/tikz/natoapp6c/normal text (key)</code>	17601

/tikz/natoapp6c/right (key) .	17700	\@ifundefinedcolor	356,	14644, 14647, 14650, 14896,
/tikz/natoapp6c/small squashed			18002, 18015, 18027, 18043,	14903, 15715, 15716, 15734,
text (key)	17601		19873, 19886, 19898, 19915	15735, 15784, 15785, 15802,
/tikz/natoapp6c/small text (key)		\@lbchar	467, 477, 486,	15803, 15827, 15828, 15859,
.	17601		676, 697, 704, 705, 708, 718,	15860, 16061, 16062, 16063,
/tikz/natoapp6c/squashed text			729, 737, 762, 779, 787, 979, 1010	16064, 16065, 16066, 16067,
(key)	17601	\@llx	13923, 13940,	16068, 16069, 16070, 16071,
/tikz/natoapp6c/upper (key) .	17700		13941, 13950, 13951, 13960,	16072, 16073, 16117, 16118,
/tikz/pics/chit/1 factor (key)	14918		13961, 13970, 13971, 14010	16119, 16120, 16121, 16122,
/tikz/pics/chit/2 factors (key)		\@lly	13924, 13940,	16130, 16138, 16164, 16165,
.	14918		13941, 13950, 13951, 13960,	16166, 16167, 16168, 16169,
/tikz/pics/chit/2 factors			13961, 13970, 13971, 14011	16170, 16171, 16250, 16251,
artillery (key)	14918	\@oddsmarkers	869, 871	16252, 16253, 16254, 16255,
/tikz/pics/chit/3 factors (key)		\@percentchar		16256, 16257, 16379, 16380,
.	14918		14131, 14177, 14179, 14187,	16381, 16382, 16383, 16384,
/tikz/pics/chit/4 factors (key)			14197, 14199, 14200, 14206	16392, 16400, 16419, 16420,
.	14918	\@rbchar	468,	16421, 16422, 16423, 16424,
/tikz/pics/chit/identifier (key)			478, 483, 495, 677, 707, 712,	16425, 16426, 16457, 16458,
.	14918		713, 723, 732, 741, 748, 763,	16459, 16460, 16461, 16462,
/tikz/pics/chit/identifier			781, 788, 801, 1003, 1005, 1022	16463, 16464, 16498, 16499,
macro (key)	14918	\@resultmarkers	885, 887	16500, 16501, 16502, 16503,
/tikz/pics/chit/small		\@tabchar	464	16511, 16519, 16545, 16546,
identifier (key)	14918	\@tmp	974	16547, 16548, 16549, 16550,
\@@battlemarkers	829, 831	\@urx	13925, 13940,	16551, 16552, 16772, 16773,
\@@chit@n@to	14474 , 14498 , 14500		13941, 13950, 13951, 13960,	16774, 16775, 16776, 16777,
\@@chitimages	508, 510		13961, 13970, 13971, 14012	16785, 16793, 16843, 16844,
\@@doublechitimages	568, 570	\@ury	13926, 13940,	16845, 16846, 16847, 16848,
\@@info	483, 484		13941, 13950, 13951, 13960,	16849, 16850, 17185, 17186,
\@@oddsmarkers	872, 874		13961, 13970, 13971, 14013	17187, 17188, 17189, 17190,
\@@resultmarkers	888, 890	\\	15953	17191, 17192, 17193, 17194,
\@battlemarkers	826, 828	\~	463	17195, 17196, 17237, 17238,
\@chit@n@to	14474 , 14480 , 14496	A		17242, 17494, 17495, 17499,
\@chit@n@to@	14474 , 14482 , 14485	\addriver	17	17750, 17751, 17752, 17753,
\@chit@rep@line	969, 985, 987,	\airassaultmark	18088	17754, 17755, 17756, 17757,
989, 991, 993, 995, 997, 999,		\airbornemark	18085	17758, 17759, 17760, 17761,
1011, 1012, 1013, 1014, 1015,		\AlphaAlpha	13423, 13429	17762, 17763, 17774, 17966
1016, 1017, 1018, 1019, 1020		\amphibiousmark	18087	\arg 281, 284
\@chitimages	505, 507	\anchor	1340,	\armouredmark 18071
\@chits	15353 , 15380 , 15383		1341, 1342, 1343, 1344, 1345,	\artillerymark 18073
\@doublechitimages	565, 567		1346, 1347, 1348, 1349, 1350,	
\@doublechits	15458 , 15470 , 15473		1351, 1352, 1353, 1354, 1355,	B
\@end@chit@n@to	14485 , 14500 , 14714		1356, 1357, 1358, 1359, 1360,	\backgroundpath 1393,
\@endwg@node	136, 162, 1627		1361, 1362, 1363, 1364, 1375,	14654, 15719, 15738, 15788,
\@endwg@pic	95, 130, 1581, 17890		1376, 1377, 1378, 1379, 1380,	15806, 15830, 15862, 16092,
\@gobble	1517, 14052, 14071, 14849,		1381, 1382, 1384, 1385, 1386,	16144, 16177, 16263, 16406,
15024, 15027, 15059, 15185,			1387, 1388, 1389, 1390, 1391,	16432, 16470, 16525, 16558,
15333, 15447, 15605, 17937			14614, 14615, 14616, 14617,	16799, 16856, 16887, 17111,
\@hex@t@rotfalse	1519		14618, 14619, 14620, 14621,	17202, 17246, 17503, 17991
\@ifempty	1057 , 1058		14622, 14623, 14624, 14625,	\battlemarkers 825, 826, 829
\@ifstar	483, 15097, 15189, 15380, 15470		14626, 14627, 14628, 14629,	\bd@n 681, 799
			14630, 14631, 14632, 14633,	\bd@w 741
			14634, 14635, 14636, 14637,	\beachhex 13516
			14638, 14639, 14640, 14641,	\beginngroup 63,
				358, 462, 511, 571, 641, 657,

664, 671, 893, 1080, 1085, 13672, 19413, 19421, 19431, 19441, 19448, 19458, 19467	15412, 15413, 15505, 15532, 15963, 15971, 15972, 15973	15409, 15426, 15435, 15446, 15454, 15456, 15474, 15493, 15496, 15499, 15502, 15504, 15522, 15531, 15536, 15555, 15571, 15601, 15603, 15614, 15616, 15653, 15893, 15895
<code>\behindbackgroundpath</code> 17781	<code>\chit@</code> <u>14823</u> , 14826, 14828	<code>\chit@dbl@cellupdate</code> . <u>15458</u> , 15463
<code>\behindforegroundpath</code> 1394, 14667, 15742, 16095, 16147, 16180, 16206, 16267, 16294, 16349, 16409, 16433, 16473, 16528, 16561, 16587, 16670, 16738, 16802, 16863, 16895, 16926, 17014, 17074, 17118, 17211, 17258, 17288, 17379, 17456, 17515, 17865	<code>\chit@@</code> <u>14823</u> , 14830, 14832	<code>\chit@dbl@flip</code> <u>15458</u> , 15459
<code>\bo@rdfr@me</code> 13835, 14002, 14029, 14065	<code>\chit@bevel</code> 14418, 14682, 14780, 14781, 14786, 14796	<code>\chit@draw@framefalse</code> 14456, 14461
<code>\bo@rdfr@me@</code> 13836, 13847	<code>\chit@bevel@frac</code> 14419, 14451, 14563, 14564	<code>\chit@draw@frametrue</code> 14452, 14463, 14818
<code>\bo@rdfr@me@u</code> 13838, 13940, 13941, 13950, 13951, 13960, 13961, 13970, 13971	<code>\chit@bevel@path</code> 14547, 14792, 14802	<code>\chit@extra</code> 14417, 14681, 14773, 14775
<code>\bo@rdframe</code> .. 715, 716, 13833, 14017	<code>\chit@bkg@p@th</code> . 14538, 14658, 14691	<code>\chit@factors</code> 986, 14413, 14674, 14766, 14769
<code>\bo@rdhexes</code> 13993, 13995	<code>\chit@blank</code> 523, 528, 544, 581, 608, 15140, 15268, 15345, 15402, 15495	<code>\chit@frame</code> 14416, 14610, 14683
<code>\boardclip</code> 17, <u>14053</u> , 14074	<code>\chit@cell@frame</code> 15361, 15414, 15506, 15535	<code>\chit@full</code> 984, 14403, 14673, 14704, 14706
<code>\boardfile</code> 14199, 14379	<code>\chit@cellbg</code> 15346, 15411	<code>\chit@h</code> 15472, 15484, 15512, 15514, 15515, 15552
<code>\boardframe</code> 19, <u>13831</u> , 13832	<code>\chit@cell@dblbg</code> 15349	<code>\chit@i@tmp</code> 14967, 14968
<code>\boardH</code> 13667, 14088	<code>\chit@cliptrue</code> 14399	<code>\chit@id</code> ... 14415, 14597, 14598, 14599, 14603, 14605, 14671
<code>\boardhexes</code> 13992	<code>\chit@dbg</code> 485, 514, 516, 518, 526, 528, 532, 545, 558, 561, 576, 584, 587, 609, 805, 833, 853, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000, 1007, <u>14395</u> , 14397, 14458, 14471, 14477, 14486, 14492, 14494, 14497, 14501, 14506, 14509, 14513, 14518, 14521, 14524, 14527, 14530, 14555, 14597, 14605, 14611, 14657, 14668, 14669, 14684, 14686, 14690, 14704, 14708, 14712, 14713, 14715, 14718, 14725, 14738, 14745, 14752, 14759, 14766, 14773, 14782, 14805, 14807, 14816, 14821, 14825, 14829, 14836, 14841, 14843, 14846, 14930, 14934, 14938, 14943, 14947, 14950, 14954, 14958, 14962, 14966, 15038, 15040, 15044, 15048, 15065, 15072, 15075, 15081, 15084, 15089, 15105, 15110, 15118, 15123, 15125, 15130, 15133, 15150, 15156, 15160, 15169, 15172, 15182, 15184, 15198, 15203, 15206, 15215, 15219, 15223, 15229, 15233, 15245, 15250, 15252, 15257, 15260, 15278, 15285, 15290, 15299, 15302, 15330, 15332, 15355, 15391, 15393, 15397, 15400, 15403, 15406,	<code>\chit@left</code> 988, 14405, 14675, 14718, 14721
<code>\boardH</code> 13667, 14088	<code>\chit@dbg</code> 485, 514, 516, 518, 526, 528, 532, 545, 558, 561, 576, 584, 587, 609, 805, 833, 853, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000, 1007, <u>14395</u> , 14397, 14458, 14471, 14477, 14486, 14492, 14494, 14497, 14501, 14506, 14509, 14513, 14518, 14521, 14524, 14527, 14530, 14555, 14597, 14605, 14611, 14657, 14668, 14669, 14684, 14686, 14690, 14704, 14708, 14712, 14713, 14715, 14718, 14725, 14738, 14745, 14752, 14759, 14766, 14773, 14782, 14805, 14807, 14816, 14821, 14825, 14829, 14836, 14841, 14843, 14846, 14930, 14934, 14938, 14943, 14947, 14950, 14954, 14958, 14962, 14966, 15038, 15040, 15044, 15048, 15065, 15072, 15075, 15081, 15084, 15089, 15105, 15110, 15118, 15123, 15125, 15130, 15133, 15150, 15156, 15160, 15169, 15172, 15182, 15184, 15198, 15203, 15206, 15215, 15219, 15223, 15229, 15233, 15245, 15250, 15252, 15257, 15260, 15278, 15285, 15290, 15299, 15302, 15330, 15332, 15355, 15391, 15393, 15397, 15400, 15403, 15406,	<code>\chit@lower@left</code> 994, 14411, 14678, 14752, 14755
<code>\boardhexes</code> 13992	<code>\chit@dbg</code> 485, 514, 516, 518, 526, 528, 532, 545, 558, 561, 576, 584, 587, 609, 805, 833, 853, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000, 1007, <u>14395</u> , 14397, 14458, 14471, 14477, 14486, 14492, 14494, 14497, 14501, 14506, 14509, 14513, 14518, 14521, 14524, 14527, 14530, 14555, 14597, 14605, 14611, 14657, 14668, 14669, 14684, 14686, 14690, 14704, 14708, 14712, 14713, 14715, 14718, 14725, 14738, 14745, 14752, 14759, 14766, 14773, 14782, 14805, 14807, 14816, 14821, 14825, 14829, 14836, 14841, 14843, 14846, 14930, 14934, 14938, 14943, 14947, 14950, 14954, 14958, 14962, 14966, 15038, 15040, 15044, 15048, 15065, 15072, 15075, 15081, 15084, 15089, 15105, 15110, 15118, 15123, 15125, 15130, 15133, 15150, 15156, 15160, 15169, 15172, 15182, 15184, 15198, 15203, 15206, 15215, 15219, 15223, 15229, 15233, 15245, 15250, 15252, 15257, 15260, 15278, 15285, 15290, 15299, 15302, 15330, 15332, 15355, 15391, 15393, 15397, 15400, 15403, 15406,	<code>\chit@lower@right</code> 998, 14412, 14680, 14759, 14762
<code>\boardpath</code> 14054, 14075	<code>\chit@dbg</code> 485, 514, 516, 518, 526, 528, 532, 545, 558, 561, 576, 584, 587, 609, 805, 833, 853, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000, 1007, <u>14395</u> , 14397, 14458, 14471, 14477, 14486, 14492, 14494, 14497, 14501, 14506, 14509, 14513, 14518, 14521, 14524, 14527, 14530, 14555, 14597, 14605, 14611, 14657, 14668, 14669, 14684, 14686, 14690, 14704, 14708, 14712, 14713, 14715, 14718, 14725, 14738, 14745, 14752, 14759, 14766, 14773, 14782, 14805, 14807, 14816, 14821, 14825, 14829, 14836, 14841, 14843, 14846, 14930, 14934, 14938, 14943, 14947, 14950, 14954, 14958, 14962, 14966, 15038, 15040, 15044, 15048, 15065, 15072, 15075, 15081, 15084, 15089, 15105, 15110, 15118, 15123, 15125, 15130, 15133, 15150, 15156, 15160, 15169, 15172, 15182, 15184, 15198, 15203, 15206, 15215, 15219, 15223, 15229, 15233, 15245, 15250, 15252, 15257, 15260, 15278, 15285, 15290, 15299, 15302, 15330, 15332, 15355, 15391, 15393, 15397, 15400, 15403, 15406,	<code>\chit@n@to</code> <u>14474</u> , 14475, 14714
<code>\boardscale</code> 14200, 14375	<code>\chit@dbg</code> 485, 514, 516, 518, 526, 528, 532, 545, 558, 561, 576, 584, 587, 609, 805, 833, 853, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000, 1007, <u>14395</u> , 14397, 14458, 14471, 14477, 14486, 14492, 14494, 14497, 14501, 14506, 14509, 14513, 14518, 14521, 14524, 14527, 14530, 14555, 14597, 14605, 14611, 14657, 14668, 14669, 14684, 14686, 14690, 14704, 14708, 14712, 14713, 14715, 14718, 14725, 14738, 14745, 14752, 14759, 14766, 14773, 14782, 14805, 14807, 14816, 14821, 14825, 14829, 14836, 14841, 14843, 14846, 14930, 14934, 14938, 14943, 14947, 14950, 14954, 14958, 14962, 14966, 15038, 15040, 15044, 15048, 15065, 15072, 15075, 15081, 15084, 15089, 15105, 15110, 15118, 15123, 15125, 15130, 15133, 15150, 15156, 15160, 15169, 15172, 15182, 15184, 15198, 15203, 15206, 15215, 15219, 15223, 15229, 15233, 15245, 15250, 15252, 15257, 15260, 15278, 15285, 15290, 15299, 15302, 15330, 15332, 15355, 15391, 15393, 15397, 15400, 15403, 15406,	<code>\chit@n@to@shape</code> 14432, 14484, 14490, 14492, 14493, 14506, 14507
<code>\boardW</code> 13666, 14082	<code>\chit@dbg</code> 485, 514, 516, 518, 526, 528, 532, 545, 558, 561, 576, 584, 587, 609, 805, 833, 853, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000, 1007, <u>14395</u> , 14397, 14458, 14471, 14477, 14486, 14492, 14494, 14497, 14501, 14506, 14509, 14513, 14518, 14521, 14524, 14527, 14530, 14555, 14597, 14605, 14611, 14657, 14668, 14669, 14684, 14686, 14690, 14704, 14708, 14712, 14713, 14715, 14718, 14725, 14738, 14745, 14752, 14759, 14766, 14773, 14782, 14805, 14807, 14816, 14821, 14825, 14829, 14836, 14841, 14843, 14846, 14930, 14934, 14938, 14943, 14947, 14950, 14954, 14958, 14962, 14966, 15038, 15040, 15044, 15048, 15065, 15072, 15075, 15081, 15084, 15089, 15105, 15110, 15118, 15123, 15125, 15130, 15133, 15150, 15156, 15160, 15169, 15172, 15182, 15184, 15198, 15203, 15206, 15215, 15219, 15223, 15229, 15233, 15245, 15250, 15252, 15257, 15260, 15278, 15285, 15290, 15299, 15302, 15330, 15332, 15355, 15391, 15393, 15397, 15400, 15403, 15406,	<code>\chit@n@to@anchor</code> <u>14507</u> , 14523, 14532
<code>\boardXmax</code> 14050, 14091	<code>\chit@dbg</code> 485, 514, 516, 518, 526, 528, 532, 545, 558, 561, 576, 584, 587, 609, 805, 833, 853, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000, 1007, <u>14395</u> , 14397, 14458, 14471, 14477, 14486, 14492, 14494, 14497, 14501, 14506, 14509, 14513, 14518, 14521, 14524, 14527, 14530, 14555, 14597, 14605, 14611, 14657, 14668, 14669, 14684, 14686, 14690, 14704, 14708, 14712, 14713, 14715, 14718, 14725, 14738, 14745, 14752, 14759, 14766, 14773, 14782, 14805, 14807, 14816, 14821, 14825, 14829, 14836, 14841, 14843, 14846, 14930, 14934, 14938, 14943, 14947, 14950, 14954, 14958, 14962, 14966, 15038, 15040, 15044, 15048, 15065, 15072, 15075, 15081, 15084, 15089, 15105, 15110, 15118, 15123, 15125, 15130, 15133, 15150, 15156, 15160, 15169, 15172, 15182, 15184, 15198, 15203, 15206, 15215, 15219, 15223, 15229, 15233, 15245, 15250, 15252, 15257, 15260, 15278, 15285, 15290, 15299, 15302, 15330, 15332, 15355, 15391, 15393, 15397, 15400, 15403, 15406,	<code>\chit@oob@cellupdate</code> ... 15063, 15143, 15241, 15271, 15323
<code>\boardXmin</code> 13666, 14048, 14082, 14090, 14092	<code>\chit@dbg</code> 485, 514, 516, 518, 526, 528, 532, 545, 558, 561, 576, 584, 587, 609, 805, 833, 853, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000, 1007, <u>14395</u> , 14397, 14458, 14471, 14477, 14486, 14492, 14494, 14497, 14501, 14506, 14509, 14513, 14518, 14521, 14524, 14527, 14530, 14555, 14597, 14605, 14611, 14657, 14668, 14669, 14684, 14686, 14690, 14704, 14708, 14712, 14713, 14715, 14718, 14725, 14738, 14745, 14752, 14759, 14766, 14773, 14782, 14805, 14807, 14816, 14821, 14825, 14829, 14836, 14841, 14843, 14846, 14930, 14934, 14938, 14943, 14947, 14950, 14954, 14958, 14962, 14966, 15038, 15040, 15044, 15048, 15065, 15072, 15075, 15081, 15084, 15089, 15105, 15110, 15118, 15123, 15125, 15130, 15133, 15150, 15156, 15160, 15169, 15172, 15182, 15184, 15198, 15203, 15206, 15215, 15219, 15223, 15229, 15233, 15245, 15250, 15252, 15257, 15260, 15278, 15285, 15290, 15299, 15302, 15330, 15332, 15355, 15391, 15393, 15397, 15400, 15403, 15406,	<code>\chit@oob@rowupdate</code> 15074, 15134, 15175, 15261, 15305, 15321
<code>\boardYmax</code> 14051, 14085	<code>\chit@dbg</code> 485, 514, 516, 518, 526, 528, 532, 545, 558, 561, 576, 584, 587, 609, 805, 833, 853, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000, 1007, <u>14395</u> , 14397, 14458, 14471, 14477, 14486, 14492, 14494, 14497, 14501, 14506, 14509, 14513, 14518, 14521, 14524, 14527, 14530, 14555, 14597, 14605, 14611, 14657, 14668, 14669, 14684, 14686, 14690, 14704, 14708, 14712, 14713, 14715, 14718, 14725, 14738, 14745, 14752, 14759, 14766, 14773, 14782, 14805, 14807, 14816, 14821, 14825, 14829, 14836, 14841, 14843, 14846, 14930, 14934, 14938, 14943, 14947, 14950, 14954, 14958, 14962, 14966, 15038, 15040, 15044, 15048, 15065, 15072, 15075, 15081, 15084, 15089, 15105, 15110, 15118, 15123, 15125, 15130, 15133, 15150, 15156, 15160, 15169, 15172, 15182, 15184, 15198, 15203, 15206, 15215, 15219, 15223, 15229, 15233, 15245, 15250, 15252, 15257, 15260, 15278, 15285, 15290, 15299, 15302, 15330, 15332, 15355, 15391, 15393, 15397, 15400, 15403, 15406,	<code>\chit@oob@spacer</code> 525, 529, 583, 15092, 15123, 15124, 15125, 15213, 15250, 15251, 15252, 15408, 15501
<code>\boardYmin</code> 13667, 14049, 14084, 14086, 14088	<code>\chit@dbg</code> 485, 514, 516, 518, 526, 528, 532, 545, 558, 561, 576, 584, 587, 609, 805, 833, 853, 978, 980, 982, 984, 986, 988, 990, 992, 994, 996, 998, 1000, 1007, <u>14395</u> , 14397, 14458, 14471, 14477, 14486, 14492, 14494, 14497, 14501, 14506, 14509, 14513, 14518, 14521, 14524, 14527, 14530, 14555, 14597, 14605, 14611, 14657, 14668, 14669, 14684, 14686, 14690, 14704, 14708, 14712, 14713, 14715, 14718, 14725, 14738, 14745, 14752, 14759, 14766, 14773, 14782, 1	

coords/vertex	1154	\hex@c@name	13354, 13382, 13383, 13386	1324, 13696, 13698, 13700,
fortress	13485	\hex@c@namep@rse	13367, 13369	13701, 13702, 13713, 13715,
fortress 2	13496	\hex@c@namep@rse	13366, 13383	13717, 13718, 13719, 13731,
hex/extra	1462	\hex@c@pic	1453, 13350,	13732, 13738, 13739, 13740,
hex/extra clipped	1462		13351, 13380, 13387, 13391	13757, 13759, 13761, 13762,
hex/label	1462			13763, 13791, 13792, 13796,
hex/ridges	1462	\hex@c@pos	13352, 13353,	13797, 13810, 13811, 13817
hex/terrain	1462		13381, 13384, 13388, 13391	\hex@e@dx 1073, 1325, 1326, 1327, 1328
hex/town	1462	\hex@c@tmp	13373, 13379	\hex@e@dy 1074, 1325, 1326, 1327, 1328
terrain/clip	1518	\hex@col	691, 1157, 1158, 1207,	\hex@e@xx 1068, 1073, 1314
terrain/code	1518		1209, 1217, 1218, 1238, 1248,	\hex@e@yy 1069, 1074, 1314
terrain/image	1518		1404, 13423, 13436, 13444,	\hex@edg 1180, 1181, 1182, 1183,
terrain/pic	1518		13456, 13460, 13997, 14000,	1184, 1185, 1186, 1187, 1188,
hex/coords/column (key)	1154		14019, 14023, 14057, 14062	1189, 1190, 1191, 1192, 1227,
hex/coords/edge (key)	1154	\hex@coords@col@fac	710, 1114,	1228, 1230, 1233, 1235, 1241
hex/coords/offset (key)	1154		1115, 1154, 1207, 1209, 13850	\hex@eff@col 1208, 1210, 1211
hex/coords/row (key)	1154	\hex@coords@col@off		\hex@eff@row 1214, 1216, 1217, 1218
hex/coords/vertex (key)	1154		709, 1095, 1096, 1154, 1207,	\hex@extra 1401, 1416,
hex/fortress (key)	13485		1210, 1217, 1218, 13911, 13917	1455, 1456, 1457, 1459, 1469
hex/fortress 2 (key)	13496	\hex@coords@conv		\hex@extra@clip 1399, 1414, 1415, 1418, 1471
hex/terrain/beach (key)	1681, 1687		1204, 1251, 13839,	\hex@getscale 13670, 13671, 13687
hex/terrain/city (key)	8049		13996, 13999, 14018, 14022	\hex@got@bot@short 1125, 1129, 1133, 13881
hex/terrain/clip (key)	1518	\hex@coords@reset		\hex@got@short 1078
hex/terrain/code (key)	1518		1195, 1196, 1205, 14055, 14060	\hex@got@top@short 1140, 1144, 1148, 13880
hex/terrain/image (key)	1518	\hex@coords@row@fac	707, 1106, 1107, 1153,	\hex@l@abs 13417, 13426, 13454, 13455
hex/terrain/light woods (key)	2351, 2357		1213, 1215, 13849, 13910, 13916	\hex@l@col 13436, 13438, 13444, 13446
hex/terrain/mountain (key)	13172	\hex@coords@row@off		\hex@l@on@pad 13419,
hex/terrain/mountains (key)	6009, 6015		706, 1091, 1092, 1153, 1213, 1216	13420, 13430, 13438, 13439,
hex/terrain/pic (key)	1518	\hex@dbg	701, 1058, 1060,	13446, 13447, 13461, 13462
hex/terrain/rough (key)	4462, 4468		1126, 1130, 1134, 1141, 1145,	\hex@l@pos 13451, 13477, 13482
hex/terrain/swamp (key)	4166, 4172		1149, 1209, 1215, 1237, 1313,	\hex@l@rot 13453, 13478, 13482
hex/terrain/town (key)	7003		1314, 1395, 1416, 1457, 1482,	\hex@l@row 13435, 13439, 13443, 13447
hex/terrain/town/house (key)	6679		1498, 1501, 1505, 1507, 1509,	\hex@l@text 1498, 1502, 1506, 1507,
hex/terrain/town/road (key)	6679		1514, 1567, 1570, 1580, 1605,	1509, 1510, 13413, 13415,
hex/terrain/town/small road (key)	6679		1611, 1614, 1622, 1625, 13257,	13418, 13422, 13428, 13433,
hex/terrain/tree (key)	13183		13278, 13285, 13292, 13303,	13437, 13445, 13449, 13450,
hex/terrain/village (key)	6701		13314, 13326, 13328, 13385,	13476, 13480, 13481, 13482
hex/terrain/woods (key)	3177, 3183		13432, 13442, 13460, 13466,	\hex@l@tmp 13467, 13474
\hex@	1484, 1486, 1488		13475, 13639, 13644, 13649,	\hex@label 694, 695, 1400,
\hex@@	1484, 1489, 1490, 1492		13654, 13840, 13845, 13977,	1420, 1421, 1470, 13466, 13473
\hex@@@	1493, 1496		14008, 14014, 14033, 14037,	\hex@label@is@namefalse 1076
\hex@bevel	1254, 1422, 1423, 1428, 1441		14044, 14141, 14146, 14161,	\hex@make@sextants 1637, 1639, 1679, 1680, 1681
\hex@bevel@frac	1255, 1268, 1278, 1279, 1280		14164, 14167, 14170, 14231,	\hex@max@row 13397, 13399, 13434, 13435
\hex@bevel@path	1276, 1436, 1449		14272, 14277, 14282, 14287,	\hex@off 1161, 1162, 1221, 1222,
\hex@board@path	13976,		14292, 14328, 14348, 14356	1226, 1228, 1230, 1235, 1242
	13977, 14031, 14068, 14070	\hex@do@label	1421, 13464, 13465	\hex@r@n 13246, 13265, 13267
\hex@bot@short@col	712, 1124, 1126, 1128,	\hex@do@ridges	1413, 13248, 13251	\hex@r@p 13270, 13274,
	1130, 1132, 1134, 13862, 13870	\hex@do@terrain	1411, 1565, 1566	13276, 13278, 13282, 13284,
		\hex@do@town	1454, 13365, 13372	
		\hex@dx	1071, 1319, 1320, 1321, 1322	
		\hex@dy	1072,	
			1319, 1320, 1321, 1322, 1323,	

13285, 13289, 13291, 13292, 13296, 13299, 13301, 13303, 13307, 13310, 13312, 13314, 13318, 13321, 13322, 13324, 13326, 13328, 13329, 13330	1145, 1147, 1149, 13863, 13869	\ifhex@terrain@pic 5, 1063, 1688, 2358, 3184, 4173, 4469, 6016, 6680, 7004, 8050
\hex@r@R 13218, 13250, 13269	\hex@town 1398, 1452, 1454, 1468, 13378	\ifn@to@pp@below . 17720, 17721, 18250, 19181, 19193, 19295, 19336, 19587, 19711, 19721, 19804, 19821, 19831, 19838
\hex@r@r . . . 13237, 13245, 13264, 13267, 13274, 13276, 13282, 13284, 13289, 13291, 13296, 13299, 13301, 13307, 13310, 13312, 13318, 13322, 13324	\hex@vtx . 1164, 1165, 1166, 1167, 1168, 1169, 1170, 1171, 1172, 1173, 1174, 1175, 1176, 1220, 1221, 1222, 1224, 1226, 1240	\ifn@to@pp@isclip 16016, 17253, 17510
\hex@r@s 13219, 13249, 13268	\hex@x 1212, 1221, 1224, 1225, 1228, 1229, 1234, 1236, 1243, 1245, 13840, 13841, 13843	\ifn@to@pp@mod . 17720, 17722, 18251
\hex@r@t 13267, 13268, 13276, 13282, 13289, 13296, 13307, 13318	\hex@x@r 1638	\ifn@to@pp@decoy 17687, 17906
\hex@r@tmp 13252, 13256, 13257	\hex@xx 1065, 1066, 1071, 1313	\ifnum . . . 61, 1061, 13423, 13434, 13458, 13459, 13463, 13861, 13873, 13883, 13889, 13893, 14347, 14354, 14355, 14398, 14917, 15136, 15158, 15168, 15171, 15234, 15264, 15288, 15298, 15301, 15319, 15324, 15416, 15517, 15537, 15538, 15544, 15629, 15695, 15699, 15703, 15759, 15764, 15769, 15774, 15894, 15908, 15998
\hex@r@w 13238, 13247, 13269	\hex@y 1219, 1222, 1224, 1225, 1230, 1231, 1234, 1236, 1244, 1246, 13840, 13842, 13844	\ifodd 15694, 15755
\hex@radius . . 1070, 1316, 1317, 1318	\hex@yy 1065, 1067, 1068, 1069, 1072, 1217, 1218, 1228, 1230, 1235, 1313	\ifpgf@arccorners 282
\hex@ridges 1397, 1412, 1413, 1467, 13255, 13257	\hexboardpath 14070, 14077	\ifsplit@standalone 14185, 14203, 14265
\hex@row 692, 1159, 1160, 1213, 1215, 1239, 1247, 1403, 13424, 13430, 13435, 13443, 13457, 13460, 13998, 14001, 14020, 14024, 14058, 14063	\hexdbglvl 1058, 1059, 1061	\iftikz@mode@draw 346, 362
\hex@scale . 13687, 13696, 13698, 13700, 13701, 13702, 13713, 13715, 13717, 13718, 13719, 13731, 13732, 13737, 13738, 13739, 13740, 13754, 13757, 13759, 13761, 13762, 13763, 13791, 13792, 13794, 13796, 13797, 13810, 13811, 13817	\hexpath 1330, 1393, 1408	\iftikz@mode@fill 347, 363, 14819, 19399
\hex@short@col 1077	\hoob 15188	\ifwg@chit@drop . . 499, 15887, 15911
\hex@t@angle . . 1594, 1596, 1597, 1602, 1605, 1606, 1618, 1629	\ht 15718, 15737, 15787, 15805, 15829, 15861	\ifwg@dsixdot 15727, 15743
\hex@t@c 1578, 1583, 1585		\ifwg@ignore@sub@nchor 72, 76
\hex@t@cc 1577, 1579		\ifwg@notrelevantforpathsize 169, 179
\hex@t@clip 1526, 1574, 1575, 1576, 1577		\ifwg@oob@inv 15064, 15091, 15111, 15236
\hex@t@code 1525, 1573, 1592, 1593, 1607		\ifwg@s@ve 110, 270
\hex@t@image 1524, 1572, 1591, 1610, 1624		\ig 15208, 15210, 15218, 15219
\hex@t@pic 1523, 1571, 1590, 1612, 1616		\ignorespaces 14197
\hex@t@s@angle . . . 1528, 1600, 1602		\immediate 473, 474, 480, 14182, 14184, 14207
\hex@t@tmp . . 1568, 1569, 1582, 1583		\includegraphics 1627, 14214, 14379
\hex@terrain 1396, 1410, 1411, 1466, 1567, 1568		\infantrymark 18072
\hex@terrain@picfalse 6, 8		\info 482, 547, 611, 686, 696, 838, 841, 876, 879, 897, 900, 903, 906, 909, 912, 915, 926, 936, 957
\hex@terrain@pictrue 10, 1064		\inheritanchor 14865, 14866, 14867, 14868, 14869, 14870, 14871, 14872, 14873, 14874, 14875, 14876, 14877, 14878, 14879, 14880, 14881, 14882, 14883, 14884, 14885, 14886, 14887, 14888, 14889, 14890, 14891, 14892, 14893,
\hex@top@short@col 711, 1139, 1141, 1143,		

14894, 14895, 16139, 16140,	16825, 16851, 16852, 16853,	17423, 17424, 17425, 17426,
16141, 16142, 16143, 16172,	16854, 16855, 16874, 16875,	17427, 17428, 17429, 17430,
16173, 16174, 16175, 16176,	16876, 16877, 16878, 16879,	17431, 17432, 17438, 17439,
16187, 16188, 16189, 16190,	16880, 16881, 16882, 16883,	17440, 17441, 17442, 17443,
16191, 16192, 16193, 16194,	16884, 16885, 16886, 16907,	17444, 17445, 17446, 17447,
16195, 16196, 16197, 16198,	16908, 16909, 16910, 16911,	17448, 17449, 17450, 17451,
16199, 16200, 16201, 16202,	16912, 16913, 16914, 16915,	17452, 17453, 17454, 17480,
16203, 16204, 16258, 16259,	16916, 16917, 16918, 16919,	17481, 17482, 17483, 17484,
16260, 16261, 16262, 16275,	16920, 16921, 16922, 16923,	17485, 17486, 17487, 17488,
16276, 16277, 16278, 16279,	16924, 16972, 16973, 16974,	17489, 17490, 17491, 17492,
16280, 16281, 16282, 16283,	16975, 16976, 16977, 16978,	17493, 17526, 17527, 17528,
16284, 16285, 16286, 16287,	16979, 16980, 16981, 16982,	17529, 17530, 17531, 17532,
16288, 16289, 16290, 16291,	16983, 16984, 16985, 16986,	17533, 17534, 17535, 17536,
16292, 16313, 16314, 16315,	16987, 16988, 16989, 16995,	17537, 17538, 17539, 17540,
16316, 16317, 16318, 16319,	16996, 16997, 16998, 16999,	17541, 17542, 17953, 17954,
16320, 16321, 16322, 16323,	17000, 17001, 17002, 17003,	17955, 17956, 17957, 17958,
16324, 16325, 16326, 16327,	17004, 17005, 17006, 17007,	17959, 17960, 17961, 17962,
16328, 16329, 16335, 16336,	17008, 17009, 17010, 17011,	17963, 17964, 17965, 17982,
16337, 16338, 16339, 16340,	17012, 17038, 17039, 17040,	17983, 17984, 17985, 17986,
16341, 16342, 16343, 16344,	17041, 17042, 17043, 17044,	17987, 17988, 17989, 17990
16345, 16346, 16347, 16401,	17045, 17046, 17047, 17048,	<code>\inheritbackgroundpath .</code> 14912,
16402, 16403, 16404, 16405,	17049, 17050, 17051, 17052,	16205, 16293, 16330, 16348,
16427, 16428, 16429, 16430,	17053, 17054, 17060, 17061,	16586, 16646, 16669, 16719,
16431, 16465, 16466, 16467,	17062, 17063, 17064, 17065,	16737, 16826, 16925, 16990,
16468, 16469, 16520, 16521,	17066, 17067, 17068, 17069,	17013, 17055, 17073, 17147,
16522, 16523, 16524, 16553,	17070, 17071, 17072, 17098,	17287, 17355, 17378, 17433,
16554, 16555, 16556, 16557,	17099, 17100, 17101, 17102,	17455, 17543, 17972, 17979
16568, 16569, 16570, 16571,	17103, 17104, 17105, 17106,	<code>\inheritbehindbackgroundpath .</code>
16572, 16573, 16574, 16575,	17107, 17108, 17109, 17110,	..... 16991, 17148, 17974
16576, 16577, 16578, 16579,	17129, 17130, 17131, 17132,	<code>\inheritbehindforegroundpath .</code>
16580, 16581, 16582, 16583,	17133, 17134, 17135, 17136,	..... 14913, 16331,
16584, 16585, 16629, 16630,	17137, 17138, 17139, 17140,	16647, 16720, 16827, 17056,
16631, 16632, 16633, 16634,	17141, 17142, 17143, 17144,	17356, 17434, 17544, 17973
16635, 16636, 16637, 16638,	17145, 17146, 17197, 17198,	<code>\inheritssavedanchors</code>
16639, 16640, 16641, 16642,	17199, 17200, 17201, 17223,	14859, 16111, 16160, 16186,
16643, 16644, 16645, 16651,	17224, 17225, 17226, 17227,	16246, 16274, 16312, 16334,
16652, 16653, 16654, 16655,	17228, 17229, 17230, 17231,	16373, 16415, 16453, 16489,
16656, 16657, 16658, 16659,	17232, 17233, 17234, 17235,	16541, 16567, 16628, 16650,
16660, 16661, 16662, 16663,	17236, 17270, 17271, 17272,	16701, 16723, 16766, 16808,
16664, 16665, 16666, 16667,	17273, 17274, 17275, 17276,	16841, 16873, 16906, 16971,
16668, 16702, 16703, 16704,	17277, 17278, 17279, 17280,	16994, 17037, 17059, 17097,
16705, 16706, 16707, 16708,	17281, 17282, 17283, 17284,	17128, 17181, 17222, 17269,
16709, 16710, 16711, 16712,	17285, 17286, 17338, 17339,	17337, 17359, 17415, 17437,
16713, 16714, 16715, 16716,	17340, 17341, 17342, 17343,	17479, 17525, 17950, 17978
16717, 16718, 16724, 16725,	17344, 17345, 17346, 17347,	<code>\init</code> 1329,
16726, 16727, 16728, 16729,	17348, 17349, 17350, 17351,	1393, 1406, 16074, 16093, 16096
16730, 16731, 16732, 16733,	17352, 17353, 17354, 17360,	<code>\innernortheast</code>
16734, 16735, 16736, 16794,	17361, 17362, 17363, 17364,	17152, 17159, 17166, 17173,
16795, 16796, 16797, 16798,	17365, 17366, 17367, 17368,	17182, 17185, 17186, 17187,
16809, 16810, 16811, 16812,	17369, 17370, 17371, 17372,	17188, 17204, 17213, 17237,
16813, 16814, 16815, 16816,	17373, 17374, 17375, 17376,	17240, 17244, 17248, 17260,
16817, 16818, 16819, 16820,	17377, 17416, 17417, 17418,	17290, 17381, 17458, 17494,
16821, 16822, 16823, 16824,	17419, 17420, 17421, 17422,	17497, 17501, 17505, 17517

<code>\is</code>	14916, 14917	1396, 1397, 1398, 1399, 1400,	<code>\mnf</code>	13884, 13890, 13902, 13909
<code>\isarched</code>	282, 286, 288, 291	1401, 1402, 1403, 1404, 1416,	<code>\mnn</code> 13886, 13894, 13897, 13904, 13911	
J				
<code>\jobname</code> ..	470, 14188, 14206, 14312	1457, 1498, 1507, 1567, 1571,	<code>\mountaineermark</code>	18083
K				
<code>\keys</code> ...	807, 809, 812, 849, 854, 859	1572, 1573, 1574, 1625, 13257,	<code>\mountainhex</code>	13514
L				
<code>\l</code>	15207,	13466, 13476, 13477, 13478,	<code>\mrx</code> 14153, 14165, 14173, 14175, 14178	
	15214, 15215, 15219, 15221,	13977, 14597, 14605, 14611,	<code>\mty</code> 14154, 14168, 14172, 14173, 14178	
	15222, 15223, 15229, 15231,	14670, 14671, 14672, 14673,	<code>\multiply</code>	1278, 1279, 1280,
	15232, 15233, 15234, 15316	14674, 14675, 14676, 14677,		13458, 13459, 14552, 14553,
<code>\LaTeX</code>	22	14678, 14679, 14680, 14681,		14560, 14561, 14563, 14564
<code>\linex</code>	16058,	14682, 14683, 14704, 14712,	<code>\mxf</code>	13885, 13891, 13903, 13915
	16086, 16087, 16089, 16090	14718, 14725, 14738, 14745,	<code>\mxn</code> 13887, 13895, 13898, 13905, 13917	
<code>\liney</code>	16057,	14752, 14759, 14766, 14773,	<code>\mxx</code>	627, 630
	16086, 16087, 16089, 16090	14805, 14807, 14966, 15044,	<code>\mxy</code>	627, 631
<code>\ll</code>	15132, 15133,	16014, 16030, 16031, 16035,	<code>\myx</code>	627, 632
	15134, 15259, 15260, 15261	16036, 17727, 17735, 17742,	<code>\myy</code>	627, 633
<code>\llc</code>	13997, 14002, 14019,	17747, 17784, 17785, 17786,	N	
	14029, 14044, 14057, 14065	17787, 17788, 17789, 17790,	<code>\n@to@friendly@cir</code>	
<code>\llr</code>	13998, 14002, 14020,	17791, 17792, 17793, 17794,		... 16105, 16145, 16148, 16351
	14029, 14044, 14058, 14065	17795, 17796, 17826, 17867,	<code>\n@to@friendly@l@nd</code> 16152, 16178,	
<code>\llx</code>	245, 253, 639, 719,	17868, 17869, 17870, 17871		16181, 16208, 16296, 16435
	14010, 14014, 14033, 14034,	<code>\mid</code>	<code>\n@to@friendly@sub</code>	
	14041, 14044, 14046, 14048	17879		... 16367, 16407, 16410
<code>\lly</code>	246, 253, 639, 719,	<code>\min@short</code> 13863, 13870, 13910, 13911	<code>\n@to@hostile@cir</code>	
	14011, 14014, 14033, 14035,	<code>\mk@bb</code> .....		... 16478, 16526, 16529, 16740
	14042, 14044, 14046, 14049	637, 731, 746	<code>\n@to@hostile@l@nd</code>	16533,
<code>\LoadClass</code>	460	<code>\mk@i</code>		16559, 16562, 16589, 16672
<code>\lower</code>	14921	472, 477,	<code>\n@to@hostile@sub</code> 16755, 16800, 16803	
<code>\lr</code>	13912,	491, 492, 494, 630, 631, 632,	<code>\n@to@pp</code>	17933, 17934, 17935
	13933, 13938, 13939, 13940,	633, 634, 635, 639, 640, 643,	<code>\n@to@pp@act@w</code>	16009,
	13941, 13946, 13966, 13984	645, 676, 677, 684, 697, 698,		16212, 16213, 16593, 16594,
<code>\lv</code>	15243, 15262, 15319	700, 702, 704, 705, 706, 707,		16937, 16938, 17302, 17303
M				
<code>\margin</code>	721,	708, 709, 710, 711, 712, 713,	<code>\n@to@pp@belowfalse</code>	
	14026, 14034, 14035, 14038,	718, 719, 720, 721, 722, 723,		... 17721, 17799, 17904
	14039, 14595, 14639, 14640,	729, 732, 737, 738, 739, 747,	<code>\n@to@pp@belowtrue</code>	17897
	14642, 14645, 14648, 14651,	748, 762, 779, 787, 799, 800,	<code>\n@to@pp@clicptoken</code> ...	16012, 16015
	14734, 14735, 14767, 14864,	801, 975, 979, 981, 983, 1001,	<code>\n@to@pp@dbg</code>	15990,
	14898, 14899, 14905, 14906	1003, 1005, 1010, 1021, 1022		15997, 17727, 17735, 17742,
<code>\markers</code>	806, 810, 812, 848, 855, 860	<code>\mk@label</code>		17747, 17769, 17775, 17783,
<code>\markpos</code>	685, 1065	695, 701, 702		17784, 17801, 17808, 17819,
<code>\max@short</code>	13862, 13869, 13916, 13917	<code>\mk@out</code>		17826, 17828, 17833, 17867,
<code>\mby</code>	14155, 14171, 14174, 14175, 14178	471, 473, 474, 480		17875, 17880, 17884, 17888,
<code>\meaning</code>	124, 129, 156,	<code>\mk@point</code>		17895, 17899, 17905, 17908,
	161, 212, 214, 311, 348, 694,	682, 683, 760, 761, 762, 764,		17927, 17932, 17943, 19688
	701, 974, 982, 984, 986, 988,	777, 778, 779, 782, 785, 786, 787	<code>\n@to@pp@e@b</code>	
	990, 992, 994, 996, 998, 1126,	<code>\mk@pos</code> .....		... 17549, 17569, 17572, 17575
	1130, 1134, 1141, 1145, 1149,	648, 685	<code>\n@to@pp@e@cd</code>	
		<code>\mk@transform</code> .....		... 17548, 17560, 17563, 17566
		626, 730, 740	<code>\n@to@pp@e@ex</code>	17551, 17578, 17581,
		<code>\mk@w</code>		17584, 17587, 17590, 17593
		473,	<code>\n@to@pp@e@y</code>	17546, 17548, 17550,
		475, 477, 479, 486, 487, 488,		17552, 17554, 17771, 17968
		489, 490, 495, 630, 631, 632,	<code>\n@to@pp@e@yy</code>	17547, 17553,
		633, 634, 635, 639, 640, 643,		17555, 17777, 17913, 17914
		645, 676, 677, 697, 700, 702,		
		704, 705, 706, 707, 708, 709,		
		710, 711, 712, 713, 718, 719,		
		720, 721, 722, 723, 729, 732,		
		737, 748, 762, 779, 787, 799,		
		801, 975, 979, 981, 983, 1001,		
		1003, 1005, 1010, 1021, 1022		
		<code>\mlx</code> 14152, 14162, 14172, 14174, 14178		

\n@to@pp@friendl@dismounted ..	16768, 16769, 16770, 16771, 16842, 17182, 17183, 17184	\n@toapp@corps@sup@neutral ...	18090, 18094, 18099
..... 16442, 16471, 16474		\n@toapp@corps@sup@unknown ...	18090, 18095, 18100
\n@to@pp@friendly 16051, 18097, 18195	\n@to@pp@restore@fill	\n@toapp@corps@support	18095, 18096, 18171, 18552
\n@to@pp@hostile 16052, 18098, 18177	..... 16018, 16033, 16048	\n@toapp@opt	18196, 18198, 18200, 18202
\n@to@pp@inst@h	\n@to@pp@s@ll	\n@toapp@path 18171, 18172,	18173, 18178, 18180, 18182,
16008, 16300, 16677, 16689,	\n@to@pp@s@ved@fill@color	18202, 18203, 18552, 18553	\n@name
17025, 17395, 17397, 17398	16016, 16018, 16024, 16030,	NATO App6(c) frame:	
\n@to@pp@inst@x	16035, 16038, 16039, 16041	natoapp6c	17722
16007, 16302, 16303, 16304, 16305,	\n@to@pp@s@ved@stroke@color ..	natoapp6c base	16054
16691, 16692, 16693, 16694,	..... 16016, 16017, 16021,	natoapp6c friendly activity	16184
17027, 17028, 17029, 17030,	16027, 16031, 16036, 16042	..... 16184	16104
17405, 17406, 17407, 17408	\n@to@pp@s@pace@h	natoapp6c friendly	16434
\n@to@pp@isclip	16010, 16356, 16744, 17086, 17467	dismounted	16244
16011, 16013	\n@to@pp@stroke@to@fill	natoapp6c friendly	16272
\n@to@pp@isclipfalse . 16016, 17810	..... 16018, 16019, 16046	equipment	16151
\n@to@pp@iscliptrue	\n@to@pp@text@normal	natoapp6c friendly	16310
17807	..... 17615, 17616, 18103, 19689	installation	16332
\n@to@pp@modfalse 17722, 17798, 17859	\n@to@pp@text@small	natoapp6c friendly sub	16366
\n@to@pp@modtrue .....	..... 17615, 17620, 19604	surface	16655
17832	\n@to@pp@text@smallsquashed ..	..... 16477	16626
\n@to@pp@neutr@l@bottom .....	..... 17615, 17622, 19601	natoapp6c hostile activity	16648
..... 16834, 16892, 16900,	\n@to@pp@text@squashed .....	..... 16648	16532
16932, 17020, 17115, 17122	..... 17615, 17618, 19620	natoapp6c hostile air ..	16721
\n@to@pp@neutr@l@init	\n@to@pp@tmp 18249, 18250, 18252,	..... 16699	16754
..... 16829, 16857,	18269, 19192, 19193, 19194	natoapp6c hostile space .	16904
16864, 16888, 16896, 16928,	\n@to@pp@unknown 16054, 18100, 18309	natoapp6c hostile sub	16839
17016, 17076, 17112, 17119	\n@to@pp@unknown@bottom .....	..... 17126	17126
\n@to@pp@neutr@l@left .....	..... 17165, 17209, 17218,	natoapp6c neutral activity	16904
..... 16831, 16861,	17296, 17387, 17508, 17520	..... 16839	17126
16868, 16891, 16899, 16931,	\n@to@pp@unknown@init	natoapp6c neutral dismantled	17126
17019, 17080, 17114, 17121	..... 17150, 17203,	..... 17126	16969
\n@to@pp@neutr@l@ne 16836, 16889,	17212, 17247, 17259, 17289,	natoapp6c neutral air ..	16839
16897, 16929, 17017, 17083	17380, 17457, 17504, 17516	..... 17126	17126
\n@to@pp@neutr@l@nw	\n@to@pp@unknown@left	natoapp6c neutral equipment	16969
..... 16835, 17113, 17120	..... 17158, 17208,	..... 16969	16969
\n@to@pp@neutr@l@right	17217, 17252, 17264, 17295,	natoapp6c neutral installation	16648
..... 16832, 16859,	17386, 17463, 17507, 17519	..... 16648	16532
16866, 17078, 17116, 17123	\n@to@pp@unknown@right	natoapp6c hostile land ..	16532
\n@to@pp@neutr@l@se .....	..... 17172, 17206,	natoapp6c hostile sea	16699
... 16837, 16858, 16865, 17077	17215, 17250, 17262, 17293,	surface	16699
\n@to@pp@neutr@l@sw	17384, 17461, 17509, 17521	natoapp6c hostile space .	16721
16838	\n@to@pp@unknown@top ... 17151,	natoapp6c hostile sub	16754
\n@to@pp@neutr@l@top ... 16833,	17207, 17216, 17251, 17263,	surface	16754
16860, 16867, 16890, 16898,	17294, 17385, 17392, 17462	natoapp6c neutral activity	16904
16930, 17018, 17079, 17084	\n@to@pp@font .....	..... 16904	16839
\n@to@pp@neutral	17602, 17611, 17612, 17613, 17614	natoapp6c neutral dismantled	17126
... 16053, 18099, 18197, 18233	\n@to@pp@p@th ... 17635, 17828, 17829	..... 17126	16969
\n@to@pp@next .. 19400, 19402, 19404	\n@toapp	natoapp6c neutral equipment	16969
\n@to@pp@r	17929, 17930, 17931	..... 16969	16969
16011, 16056, 16113, 16114, 16115,	\n@toapp@corps@sup@friendly ..		
16116, 16162, 16163, 16248,	..... 18090, 18091, 18097		
16249, 16358, 16359, 16360,	\n@toapp@corps@sup@hostile ...		
16361, 16375, 16376, 16377,	..... 18090, 18093, 18098		
16378, 16417, 16418, 16455,			
16456, 16491, 16492, 16494,			
16495, 16497, 16543, 16544,			
16746, 16747, 16748, 16749,			

natoapp6c neutral installation			
.....	16992		
natoapp6c neutral land ..	16871		
natoapp6c neutral sea			
surface	17035		
natoapp6c neutral space .	17057		
natoapp6c neutral sub			
surface	17095		
natoapp6c unknown activity			
.....	17267		
natoapp6c unknown air ..	17220		
natoapp6c unknown dismantled			
.....	17523		
natoapp6c unknown equipment			
.....	17335		
natoapp6c unknown installation			
.....	17357		
natoapp6c unknown land ..	17179		
natoapp6c unknown sea			
surface	17413		
natoapp6c unknown space .	17435		
natoapp6c unknown sub			
surface	17477		
NATO App6(c) keys:			
below	17686		
bottom	17686		
cmd	17628		
command	17649		
ech	17628		
echolon	17666		
fac	17628		
faction	17636		
frame	17686		
id	17628		
left	17686		
main	17686		
natoapp6c	17623		
right	17686		
top	17686		
NATO App6(c) symbols:			
above corps support	18168		
air assault	18188		
air assault with organic			
lift	18174		
air decoy	18183		
air defence	18192		
air strip	18204		
air traffic	18210		
airborne	18230		
airship	18219		
ammunition	18240		
amphibious	18246		
amphibious warfare ship .	18282		
analysis	18292		
antenna	18314		
anti tank anti armour ..	18306		
arctic	18332		
armoured	18318		
armoured fighting vehicle	18322		
armoured personnel carrier	18327		
arrest	18297		
artillery	18302		
automobile	18337		
balloon	18357		
bar	18365		
base	18369		
bicycle equipped	18379		
boat	18382		
booby trap	18395		
bottomed	18403		
bridge	18407		
capsule	18423		
carrier	18432		
chemical biological			
radiological nuclear .	18441		
civilian military cooperation	18447		
civilian police	18452		
civilian telecommunications	18459		
coast guard vessel	18466		
combat support	18471		
combatant	18476		
combined arms	18513		
computer system	18518		
control	18528		
convoy	18537		
corps support	18549		
crime	18554		
decoy	18557		
direct communications ..	18564		
direction finding	18570		
diving	18574		
drilling	18594		
earthmover	18598		
electric power	18606		
electronic ranging	18619		
electronic warfare wide .	18623		
engineer	18630		
enhanced location reporting	18634		
system	18634		
environmental protection	18638		
explosion	18658		
finance	18668		
fire protection	18687		
fishing vessel	18673		
fixed and rotary wing ..	18696		
fixed wing	18703		
flame thrower	18710		
floating	18716		
food	18734		
fuel	18741		
graffiti	18757		
grenade launcher	18745		
group	18771		
gun	18777		
headquarters	18802		
house	18807		
howitzer	18813		
in position	18821		
individual	18826		
infantry	18831		
intermodal	18835		
jagged wave	18849		
jam	18859		
jamming	18880		
jetski	18884		
killing	18899		
labour	18902		
land mine	18907		
land missile	18918		
laser	18921		
launcher	18941		
laundry	18945		
machine gun	18952		
main gun	18957		
maintenance	18962		
medic	18976		
medical	18993		
medical treatment	18996		
mine	19002		
mine clearing equipment .	19013		
mine warfare vessel	19018		
missile	19024		
missile launcher	19039		
mobile advisor and support	19067		
moored	19079		
mortar	19083		
mortuary affairs	19092		
motorized	19088		
mountain	19097		
naval	19102		
navigation	19113		
navy task	19119		
non combatant	19125		
non lethal weapon	19137		
nuclear	19142		

observer	19150	survey	19664	natoapp6c hostile space (frame)	16721
orbiter shuttle	19154	tactical satellite	19670	natoapp6c hostile sub surface	16754
ordnance	19163	tank	19680	(frame)	16754
organisation	19175	TBD	18101	natoapp6c neutral activity	16904
over snow	19178	text	19685	(frame)	16839
pack animal	19189	topographic	19690	natoapp6c neutral air (frame)	17126
patrol	19196	torpedo	19697	natoapp6c neutral dismantled	16969
patrolling	19201	towed	19708	(frame)	16992
physician	19211	tracked	19718	natoapp6c neutral equipment	16871
pipeline	19216	train locomotive	19734	(frame)	17035
poisoning	19223	transportation	19739	natoapp6c neutral installation	17057
postal	19229	type	18139	(frame)	17095
printed media	19236	unexploded ordnance	19747	natoapp6c neutral land (frame)	17267
prison	19844	unmanned	19754	natoapp6c neutral sea surface	17220
psychological	19242	utility vehicle	19765	(frame)	17523
quarry	19251	vehicle	19771	natoapp6c unknown activity	17335
quartermaster	19260	video imagery	19780	(frame)	17357
radar	19266	warfare vessel	19788	natoapp6c unknown air (frame)	17179
radio	19271	water	19792	natoapp6c unknown dismantled	17413
radio relay	19276	weapon	18104	(frame)	17435
radio relay line of sight	19280	wheeled	19799	natoapp6c unknown equipment	17477
radio teletype	19286	\natoapp ...	27, 17925, 17926, 18068	(frame)	17686
railroad	19292	natoapp6c (frame)	17722	natoapp6c/below (key)	17686
reconnaissance	19309	natoapp6c base (frame)	16054	natoapp6c/bottom (key)	17628
recovery unmanned systems	19318	natoapp6c friendly activity	16184	natoapp6c/cmd (key)	17649
rifle	19323	(frame)	16104	natoapp6c/command (key)	17628
rising	19328	natoapp6c friendly air (frame)	16434	natoapp6c/ech (key)	17666
riverine	19333	natoapp6c friendly dismantled	16244	natoapp6c/echolon (key)	17628
rocket launcher	19343	(frame)	16272	natoapp6c/fac (key)	17686
rotary wing	19374	natoapp6c friendly equipment	16151	natoapp6c/frame (key)	17628
runway	19380	(frame)	16310	natoapp6c/id (key)	17686
sailing boat	19384	natoapp6c friendly installation	16332	natoapp6c/left (key)	17686
satellite	19394	(frame)	16366	natoapp6c/main (key)	17686
sea mine	19486	natoapp6c friendly land (frame)	16565	natoapp6c/right (key)	17686
seabed installation	19518	(frame)	16477	natoapp6c/s/above corps support	18168
search	19530	natoapp6c friendly sea surface	16806	(symbol)	18188
searching	19534	(frame)	16626	natoapp6c/s/air assault (symbol)	
semi trailer truck	19544	natoapp6c friendly space (frame)	16648		
sensor	19550	(frame)	16532		
ship	19555	natoapp6c friendly sub surface	16699		
signal	19568	(frame)			
signals intelligence	19572	natoapp6c hostile activity			
ski	19577	(frame)			
sled	19584	natoapp6c hostile air (frame)			
small squashed text	19598	natoapp6c hostile dismantled			
small text	19602	(frame)			
sniper	19605	natoapp6c hostile equipment			
space station	19609	(frame)			
squashed text	19618	natoapp6c hostile installation			
submarine	19621	(frame)			
submersible	19631	natoapp6c hostile land (frame)			
supply	19638	(frame)			
surface combatant	19643	natoapp6c hostile sea surface			
		(frame)			

natoapp6c/s/air assault with organic lift (symbol) .	18174	natoapp6c/s/civilian telecommunication (symbol)	18459	natoapp6c/s/fuel (symbol) . .	18741
natoapp6c/s/air decoy (symbol)	18183	natoapp6c/s/coast guard vessel (symbol)	18466	natoapp6c/s/graffiti (symbol) .	18757
natoapp6c/s/air defence (symbol)	18192	natoapp6c/s/combat support (symbol)	18471	natoapp6c/s/grenade launcher (symbol)	18745
natoapp6c/s/air strip (symbol)	18204	natoapp6c/s/combatant (symbol)	18476	natoapp6c/s/group (symbol) . .	18771
natoapp6c/s/air traffic (symbol)	18210	natoapp6c/s/combined arms (symbol)	18513	natoapp6c/s/gun (symbol) . . .	18777
natoapp6c/s/airborne (symbol) .	18230	natoapp6c/s/computer system (symbol)	18518	natoapp6c/s/headquarters (symbol)	18802
natoapp6c/s/airship (symbol) .	18219	natoapp6c/s/control (symbol) .	18528	natoapp6c/s/house (symbol) .	18807
natoapp6c/s/ammunition (symbol)	18240	natoapp6c/s/convoy (symbol) .	18537	natoapp6c/s/howitzer (symbol) .	18813
natoapp6c/s/amphibious (symbol)	18246	natoapp6c/s/corps support (symbol)	18549	natoapp6c/s/in position (symbol)	18821
natoapp6c/s/amphibious warfare ship (symbol)	18282	natoapp6c/s/crime (symbol) .	18554	natoapp6c/s/individual (symbol)	18826
natoapp6c/s/analysis (symbol) .	18292	natoapp6c/s/decoy (symbol) .	18557	natoapp6c/s/infantry (symbol) .	18831
natoapp6c/s/antenna (symbol) .	18314	natoapp6c/s/direct communications (symbol)	18564	natoapp6c/s/intermodal (symbol)	18835
natoapp6c/s/anti tank anti armour (symbol)	18306	natoapp6c/s/direction finding (symbol)	18570	natoapp6c/s/jagged wave (symbol)	18849
natoapp6c/s/arctic (symbol) .	18332	natoapp6c/s/diving (symbol) .	18574	natoapp6c/s/jam (symbol) . . .	18859
natoapp6c/s/armoured (symbol) .	18318	natoapp6c/s/drilling (symbol) .	18594	natoapp6c/s/jamming (symbol) .	18880
natoapp6c/s/armoured fighting vehicle (symbol)	18322	natoapp6c/s/earthmover (symbol)	18598	natoapp6c/s/jetski (symbol) .	18884
natoapp6c/s/armoured personnel carrier (symbol)	18327	natoapp6c/s/electric power (symbol)	18606	natoapp6c/s/killing (symbol) .	18899
natoapp6c/s/arrest (symbol) .	18297	natoapp6c/s/electronic ranging (symbol)	18619	natoapp6c/s/labour (symbol) .	18902
natoapp6c/s/artillery (symbol)	18302	natoapp6c/s/electronic warfare wide (symbol)	18623	natoapp6c/s/land mine (symbol)	18907
natoapp6c/s/automobile (symbol)	18337	natoapp6c/s/engineer (symbol) .	18630	natoapp6c/s/land missile (symbol)	18918
natoapp6c/s/balloon (symbol) .	18357	natoapp6c/s/enhanced location reporting system (symbol)	18634	natoapp6c/s/laser (symbol) .	18921
natoapp6c/s/bar (symbol) . . .	18365	natoapp6c/s/environmental protection (symbol) . .	18638	natoapp6c/s/launcher (symbol) .	18941
natoapp6c/s/base (symbol) . .	18369	natoapp6c/s/explosion (symbol)	18658	natoapp6c/s/laundry (symbol) .	18945
natoapp6c/s/bicycle equipped (symbol)	18379	natoapp6c/s/finance (symbol) .	18668	natoapp6c/s/machine gun (symbol)	18952
natoapp6c/s/boat (symbol) . .	18382	natoapp6c/s/fire protection (symbol)	18687	natoapp6c/s/main gun (symbol) .	18957
natoapp6c/s/booby trap (symbol)	18395	natoapp6c/s/fishing vessel (symbol)	18673	natoapp6c/s/maintenance (symbol)	18962
natoapp6c/s/bottomed (symbol) .	18403	natoapp6c/s/fixed and rotary wing (symbol)	18696	natoapp6c/s/medic (symbol) .	18976
natoapp6c/s/bridge (symbol) .	18407	natoapp6c/s/fixed wing (symbol)	18703	natoapp6c/s/medical (symbol) .	18993
natoapp6c/s/capsule (symbol) .	18423	natoapp6c/s/flame thrower (symbol)	18710	natoapp6c/s/medical treatment (symbol)	18996
natoapp6c/s/carrier (symbol) .	18432	natoapp6c/s/floating (symbol) .	18716	natoapp6c/s/mine (symbol) . .	19002
natoapp6c/s/chemical biological radiological nuclear (symbol)	18441	natoapp6c/s/food (symbol) . .	18734	natoapp6c/s/mine clearing equipment (symbol)	19013
natoapp6c/s/civilian military cooperation (symbol) . .	18447			natoapp6c/s/mine warfare vessel (symbol)	19018
natoapp6c/s/civilian police (symbol)	18452			natoapp6c/s/missile (symbol) .	19024
				natoapp6c/s/missile launcher (symbol)	19039
				natoapp6c/s/mobile advisor and support (symbol)	19067
				natoapp6c/s/moored (symbol) .	19079
				natoapp6c/s/mortar (symbol) .	19083

natoapp6c/s/mortuary affairs (symbol)	19092	natoapp6c/s/recovery unmanned systems (symbol)	19318	natoapp6c/s/torpedo (symbol)	19697
natoapp6c/s/motorized (symbol)	19088	natoapp6c/s/rifle (symbol)	19323	natoapp6c/s/towed (symbol)	19708
natoapp6c/s/mountain (symbol)	19097	natoapp6c/s/rising (symbol)	19328	natoapp6c/s/tracked (symbol)	19718
natoapp6c/s/naval (symbol)	19102	natoapp6c/s/riverine (symbol)	19333	natoapp6c/s/train locomotive (symbol)	19734
natoapp6c/s/navigation (symbol)	19113	natoapp6c/s/rocket launcher (symbol)	19343	natoapp6c/s/transportation (symbol)	19739
natoapp6c/s/navy task (symbol)	19119	natoapp6c/s/rotary wing (symbol)	19374	natoapp6c/s/type (symbol)	18139
natoapp6c/s/non combatant (symbol)	19125	natoapp6c/s/runway (symbol)	19380	natoapp6c/s/unexploded ordnance (symbol)	19747
natoapp6c/s/non lethal weapon (symbol)	19137	natoapp6c/s/sailing boat (symbol)	19384	natoapp6c/s/unmanned (symbol)	19754
natoapp6c/s/nuclear (symbol)	19142	natoapp6c/s/satellite (symbol)	19394	natoapp6c/s/utility vehicle (symbol)	19765
natoapp6c/s/observer (symbol)	19150	natoapp6c/s/sea mine (symbol)	19486	natoapp6c/s/vehicle (symbol)	19771
natoapp6c/s/orbiter shuttle (symbol)	19154	natoapp6c/s/seabed installation (symbol)	19518	natoapp6c/s/video imagery (symbol)	19780
natoapp6c/s/ordnance (symbol)	19163	natoapp6c/s/search (symbol)	19530	natoapp6c/s/warfare vessel (symbol)	19788
natoapp6c/s/organisation (symbol)	19175	natoapp6c/s/searching (symbol)	19534	natoapp6c/s/water (symbol)	19792
natoapp6c/s/over snow (symbol)	19178	natoapp6c/s/semi trailer truck (symbol)	19544	natoapp6c/s/weapon (symbol)	18104
natoapp6c/s/pack animal (symbol)	19189	natoapp6c/s/sensor (symbol)	19550	natoapp6c/s/wheeled (symbol)	19799
natoapp6c/s/patrol (symbol)	19196	natoapp6c/s/ship (symbol)	19555	natoapp6c/top (key)	17686
natoapp6c/s/patrolling (symbol)	19201	natoapp6c/s/signal (symbol)	19568	\natoapp@below	17686 , 17697 , 17794 , 17870 , 17901
natoapp6c/s/physician (symbol)	19211	natoapp6c/s/signals intelligence (symbol)	19572	\natoapp@cmd	17633 , 17739 , 17787
natoapp6c/s/pipeline (symbol)	19216	natoapp6c/s/ski (symbol)	19577	\natoapp@decoyfalse	17687
natoapp6c/s/poisoning (symbol)	19223	natoapp6c/s/sled (symbol)	19584	\natoapp@ech	17634 , 17788 , 17868 , 17886 , 17887
natoapp6c/s/postal (symbol)	19229	natoapp6c/s/small squashed text (symbol)	19598	\natoapp@fac	16006 , 17632 , 17640 , 17741 , 17786 , 18171 , 18177 , 18195 , 18197 , 18233 , 18309 , 18552
natoapp6c/s/printed media (symbol)	19236	natoapp6c/s/small text (symbol)	19602	\natoapp@frame	17698 , 17746
natoapp6c/s/prison (symbol)	19844	natoapp6c/s/sniper (symbol)	19605	\natoapp@id	17631 , 17727 , 17728 , 17729 , 17733 , 17785
natoapp6c/s/psychological (symbol)	19242	natoapp6c/s/space station (symbol)	19609	\natoapp@left	17686 , 17691 , 17790 , 17849
natoapp6c/s/quarry (symbol)	19251	natoapp6c/s/squashed text (symbol)	19618	\natoapp@lower	17686 , 17694 , 17696 , 17793 , 17837
natoapp6c/s/quartermaster (symbol)	19260	natoapp6c/s/submarine (symbol)	19621	\natoapp@main	17686 , 17690 , 17789 , 17826 , 17829
natoapp6c/s/radar (symbol)	19266	natoapp6c/s/submersible (symbol)	19631	\natoapp@report	513 , 573 , 17624 , 17797
natoapp6c/s/radio (symbol)	19271	natoapp6c/s/supply (symbol)	19638	\natoapp@right	17686 , 17692 , 17791 , 17855
natoapp6c/s/radio relay (symbol)	19276	natoapp6c/s/surface combatant (symbol)	19643	\natoapp@upper	17686 , 17693 , 17695 , 17792 , 17843
natoapp6c/s/radio relay line of sight (symbol)	19280	natoapp6c/s/survey (symbol)	19664	\natoappdbglvl	15990 , 15996 , 15998
natoapp6c/s/radio teletype (symbol)	19286	natoapp6c/s/tactical satellite (symbol)	19670	\natoappmark	18058 , 18059 , 18071 , 18072 , 18074 , 18075 , 18076 , 18077 , 18078 , 18079 , 18080 , 18081 , 18082 , 18084 , 18086 , 18087 , 18089
natoapp6c/s/railroad (symbol)	19292	natoapp6c/s/tank (symbol)	19680	\nc	13981 , 14158 , 14163 , 14164 , 14165
natoapp6c/s/reconnaissance (symbol)	19309	natoapp6c/s/TBD (symbol)	18101		
		natoapp6c/s/text (symbol)	19685		
		natoapp6c/s/topographic (symbol)	19690		

<code>\newcounter</code>	13395, 13396, 14474, 17720	<code>\northwest</code>	.. 1320, 1333, 1344, 1356	<code>\pgf@sh@ns@M</code>	..... 203
<code>\newdimen</code>	..... 86, 87, 88, 89, 165, 166, 167, 168, 292, 1070, 1071, 1072, 1073, 1074, 1273, 1274, 1275, 13249, 13250, 14114, 15471, 15472, 16007, 16008, 16009, 16010, 16011	<code>\northwestedge</code>	... 1326, 1350, 1362	<code>\pgf@sh@nt@L</code>	..... 195
<code>\newenvironment</code>	..... ..... 186, 199, 470, 680, 16044	<code>\nr</code>	..... 14159, 14169, 14170, 14171	<code>\pgf@sh@nt@M</code>	.... 208, 210, 213, 214
<code>\newwrite</code>	..... 471, 14181	<code>\numdots</code>	..... 15744, 15755, 15759, 15764, 15769, 15774	<code>\pgf@sh@pi@L</code>	..... 196
<code>\noexpand</code> 15971, 15972, 15973	O			<code>\pgf@sh@pi@M</code> 215
<code>\nopagecolor</code>	..... 536, 593, 601, 812, 835, 858, 894	<code>\octagon</code>	..... 16075, 16094, 16097	<code>\pgf@sh@reanchor</code>	..... 83
<code>\north</code>	..... 16116, 16119, 16120, 16121, 16123, 16131, 16355, 16481, 16497, 16500, 16501, 16502, 16504, 16512, 16743	<code>\oddsmarkers</code>	..... 868, 869, 872	<code>\pgf@temp</code>	..... 209, 210, 211, 212
<code>\northeast</code>	..... 193, 206, 1319, 1332, 1343, 1355, 1424, 1437, 14539, 14592, 14615, 14616, 14617, 14618, 14619, 14620, 14621, 14622, 14642, 14645, 14648, 14651, 14659, 14692, 14731, 14784, 14794, 14809, 14860, 14897, 14904, 16153, 16161, 16164, 16165, 16166, 16167, 16168, 16169, 16170, 16171, 16211, 16247, 16250, 16251, 16252, 16253, 16254, 16255, 16256, 16257, 16264, 16268, 16299, 16368, 16374, 16379, 16380, 16381, 16382, 16385, 16393, 16400, 16416, 16419, 16420, 16421, 16422, 16423, 16424, 16425, 16426, 16436, 16443, 16454, 16457, 16458, 16459, 16460, 16461, 16462, 16463, 16464, 16534, 16542, 16545, 16546, 16547, 16548, 16549, 16550, 16551, 16552, 16592, 16675, 16756, 16767, 16772, 16773, 16774, 16775, 16778, 16786, 16793, 16830, 16842, 16843, 16844, 16845, 16846, 16847, 16848, 16849, 16850, 16936, 17024, 17085, 17184, 17189, 17190, 17191, 17192, 17193, 17194, 17195, 17196, 17239, 17243, 17299, 17394, 17466, 17496, 17500, 17980	<code>\old@pgf@protocolsize</code>	..... ..... 175, 176, 178, 197, 216	<code>\pgf@up@clip</code>	..... 16014, 16015
<code>\northeastedge</code>	... 1325, 1349, 1361	<code>\oldbo@rdframe</code>	..... 715, 717	<code>\pgf@xa</code>	..... 237, 239, 240, 328, 329, 331, 752, 754, 756, 758, 767, 769, 771, 773, 775, 13537, 13546, 13555, 13557
<code>\northedge</code>	..... 1323, 1347, 1359	<code>\oldmk@i</code>	..... 491, 494	<code>\pgf@ya</code>	.. 238, 239, 241, 753, 754, 757, 759, 768, 770, 771, 774, 776, 13538, 13547, 13556, 13557
		<code>\omk@i</code>	..... 738, 747	<code>\pgfbs@radius</code>	..... 15913, 15922
		<code>\oob</code>	..... 15096	<code>\pgfbs@steps</code>	... 15893, 15894, 15908
		<code>\oomk@i</code>	..... 684, 800	<code>\pgf@closepath</code>	..... . 1310, 14545, 14586, 14665, 14698, 14815, 16158, 16219, 16226, 16233, 16240, 16306, 16362, 16441, 16450, 16539, 16601, 16608, 16615, 16622, 16685, 16695, 16750, 16893, 16901, 16933, 16944, 16951, 16958, 16965, 17021, 17031, 17091, 17310, 17317, 17324, 17331, 17402, 17409, 17473
		<code>\openout</code>	..... 474, 14184	<code>\pgfdeclaredecoration</code>	..... ..... 655, 13527, 13563
		<code>\opts</code>	..... 345, 348, 350	<code>\pgfdeclareshape</code>	.. 1315, 14590, 14858, 15714, 15733, 15783, 15801, 15826, 15858, 16055, 16110, 16159, 16185, 16245, 16273, 16311, 16333, 16372, 16414, 16452, 16488, 16540, 16566, 16627, 16649, 16700, 16722, 16765, 16807, 16840, 16872, 16905, 16970, 16993, 17036, 17058, 17096, 17127, 17180, 17221, 17268, 17336, 17358, 17414, 17436, 17478, 17524, 17724, 17949, 17977
		<code>\or</code>	..... 1429, 1430, 1431, 1432, 1442, 1443, 1444, 1445, 14787, 14788, 14789, 14790, 14797, 14798, 14799, 14800	<code>\pgfdecoratedinputsegmentremainingdistance</code>	..... 663
		<code>\outlinerev</code>	.... 13530, 13545, 13552	<code>\pgfdecorationsegmentamplitude</code>	..... 13536, 13542
		<code>\overset</code>	..... 14922	<code>\pgfdecorationsegmentangle</code>	... ..... 13535, 13541
		P			<code>\pgfdecorationsegmentlength</code>	13532
		<code>\paperheight</code>	14192, 14226, 14240, 14257, 14274, 14278, 14283, 14288, 14293, 14294, 14329	<code>\pgfextractx</code>	... 15508, 15509, 15518	
		<code>\paperwidth</code>	14192, 14225, 14239, 14256, 14273, 14279, 14284, 14289, 14294, 14295, 14329	<code>\pgfextracty</code>	..... 15512, 15513
		<code>\parindent</code>	..... 14194	<code>\pgf@getlastxy</code>	228, 235, 14117, 14121
		<code>\parskip</code>	..... 14195		
		<code>\PassOptionsToClass</code>	.... 452, 458		
		<code>\PassOptionsToPackage</code>	... 454, 456			
		<code>\pc</code>	..... 14156, 14160, 14161, 14162, 14353, 14355, 14356, 14358, 14366		
		<code>\pgf@arccornersfalse</code>	..... 288		
		<code>\pgf@arccornerstrue</code>	..... 286		
		<code>\pgf@corner@arc</code>	..... 285		
		<code>\pgf@decorate@inputsegment@first</code>	..... 658		
		<code>\pgf@decorate@inputsegment@last</code>	..... 665, 672		
		<code>\pgf@nlt@lineto</code>	..... 13557		
		<code>\pgf@process</code>	..... 80, 327		
		<code>\pgf@protocolsizes</code>	..... ..... 176, 189, 197, 202, 216		
		<code>\pgf@setfillcolor</code>	... 16027, 16039			
		<code>\pgf@sh@np@L</code>	..... 191		
		<code>\pgf@sh@np@M</code>	..... 204		
		<code>\pgf@sh@ns@L</code>	..... 190		

<code>\pgfgettransform</code>	209	14663, 14664, 14695, 14696,	16222, 16229, 16236, 16302,
<code>\pgfgettransformentries</code>		14697, 14812, 14813, 14814,	16358, 16369, 16437, 16444,
.	211, 294, 627, 13673, 15667	15721, 15722, 15723, 15790,	16482, 16535, 16597, 16604,
<code>\pgfinterruptboundingbox</code>		15791, 15792, 15793, 15794,	16611, 16618, 16680, 16691,
.	14381, 17804	15795, 15796, 15797, 15798,	16746, 16759, 16940, 16947,
<code>\pgfkeys</code>		15808, 15809, 15810, 15811,	16954, 16961, 17027, 17205,
.	726, 743, 1483, 1484, 14004,	15812, 15813, 15814, 15815,	17214, 17249, 17261, 17292,
.	14317, 14472, 14473, 14853,	15816, 15817, 15819, 15821,	17306, 17313, 17320, 17327,
.	17718, 17719, 17940, 17944	15823, 15832, 15833, 15834,	17383, 17391, 17405, 17460,
<code>\pgfkeysalso</code>		15835, 15836, 15837, 15838,	17469, 17506, 17518, 17912
.	1027, 1033, 15900, 15929, 19863	15839, 15840, 15841, 15842,	<code>\pgfpathrectanglecorners</code>
<code>\pgfkeysalsofrom</code>	350, 812, 859	15843, 15844, 15845, 15846,	. . . . .
<code>\pgfkeyscurrentname</code>		15847, 15849, 15851, 15853,	. . . . .
.	19861, 19862, 19863	15855, 15864, 15865, 15866,	<code>\pgfpictureid</code>
<code>\pgfkeysvalueof</code>		15867, 15868, 15869, 15870,	196, 215
.	15915, 15916, 15923, 15924	15871, 15872, 15873, 15874,	<code>\pgfpointanchor</code> 226, 234, 15508,
<code>\pgflineto</code> 16831, 16832, 16833, 16834		15875, 15876, 15877, 15878,	15509, 15512, 15513, 15518
<code>\pgflinewidth</code>	321,	15879, 15881, 15883, 16077,	<code>\pgfpointdecoratedpathlast</code>
.	340, 13565, 13567, 13568,	16078, 16079, 16080, 16081,	. . . . .
.	13569, 13570, 13579, 13594,	16082, 16083, 16087, 16090,	. . . . .
.	13595, 13607, 13608, 13611,	16155, 16156, 16157, 16216,	<code>\pgfpointorigin</code>
.	13612, 13613, 13620, 13631,	16217, 16218, 16223, 16224,	1340, 1417, 1458, 1615, 1623,
.	14816, 17765, 17778, 17907,	16225, 16230, 16231, 16232,	13534, 13540, 15715, 15734,
.	18033, 18050, 19905, 19923	16237, 16238, 16239, 16303,	15784, 15802, 15827, 15859
<code>\pgfmath@smuggleone</code>	1082, 1087	16304, 16305, 16359, 16360,	<code>\pgfpointpolar</code>
<code>\pgfmathdeclarefunction</code> 1079, 1084		16361, 16438, 16439, 16440,	13535, 13541, 15761, 15762,
<code>\pgfmathrandominteger</code>	1596	16445, 16446, 16447, 16448,	15766, 15767, 15771, 15772
<code>\pgfmathsetlength</code>	321, 340, 17768	16449, 16483, 16484, 16485,	<code>\pgfpointpolarxy</code>
<code>\pgfmathsetmacro</code>		16486, 16536, 16537, 16538,	1226, 1235
.	301, 307, 338, 13680, 15674	16598, 16599, 16600, 16605,	<code>\pgfpoinyscale</code>
<code>\pgfmathtruncatemacro</code>		16606, 16607, 16612, 16613,	1226, 1235
.	13435, 13436, 13443, 13444	16614, 16619, 16620, 16621,	<code>\pgfpointtransformed</code>
<code>\pgfmoveto</code> 16835, 16836, 16837, 16838		16681, 16682, 16683, 16684,	. . . . .
<code>\pgfnode</code>	17809, 17820, 17881	16692, 16693, 16694, 16747,	. . . . .
<code>\pgfnodeparttextbox</code> 15718, 15737,		16748, 16749, 16760, 16761,	. . . . .
.	15787, 15805, 15829, 15861	16762, 16763, 16941, 16942,	. . . . .
<code>\pgfnoderename</code>	1510, 1515, 14847	16943, 16948, 16949, 16950,	. . . . .
<code>\pgfpatharc</code>	16109, 16371	16955, 16956, 16957, 16962,	. . . . .
<code>\pgfpathcircle</code>		16963, 16964, 17028, 17029,	. . . . .
.	15757, 15761, 15762,	17030, 17088, 17089, 17090,	. . . . .
.	15766, 15767, 15771, 15772,	17254, 17307, 17308, 17309,	. . . . .
.	15776, 15777, 16265, 16269	17314, 17315, 17316, 17321,	. . . . .
<code>\pgfpathclose</code>		17322, 17323, 17328, 17329,	. . . . .
.	1337, 16084, 17255, 17512	17330, 17400, 17401, 17406,	. . . . .
<code>\pgfpathcurveto</code>		17407, 17408, 17470, 17471,	. . . . .
.	17154, 17161, 17168, 17175	17472, 17511, 17916, 17917	. . . . .
<code>\pgfpathlineto</code>	1287, 1289,	<code>\pgfpathmoveto</code> 1285, 1331, 14541,	. . . . .
.	1293, 1297, 1300, 1304, 1308,	14567, 14661, 14694, 14811,	. . . . .
.	1332, 1333, 1334, 1335, 1336,	15720, 15789, 15807, 15818,	. . . . .
.	13534, 13551, 13567, 13568,	15820, 15822, 15831, 15848,	. . . . .
.	13569, 13570, 13574, 14542,	15850, 15852, 15854, 15863,	. . . . .
.	14543, 14544, 14570, 14573,	15880, 15882, 16076, 16086,	. . . . .
.	14577, 14581, 14585, 14662,	16089, 16107, 16154, 16215,	. . . . .
			16222, 16229, 16236, 16302,
			16358, 16369, 16437, 16444,
			16482, 16535, 16597, 16604,
			16611, 16618, 16680, 16691,
			16746, 16759, 16940, 16947,
			16954, 16961, 17027, 17205,
			17214, 17249, 17261, 17292,
			17306, 17313, 17320, 17327,
			17383, 17391, 17405, 17460,
			17469, 17506, 17518, 17912
			<code>\pgfpathrectanglecorners</code>
		
		
			<code>\pgfpictureid</code>
			196, 215
			<code>\pgfpointanchor</code> 226, 234, 15508,
			15509, 15512, 15513, 15518
			<code>\pgfpointdecoratedpathlast</code>
		
		
			<code>\pgfpointorigin</code>
			1340, 1417, 1458, 1615, 1623,
			13534, 13540, 15715, 15734,
			15784, 15802, 15827, 15859
			<code>\pgfpointpolar</code>
			13535, 13541, 15761, 15762,
			15766, 15767, 15771, 15772
			<code>\pgfpointpolarxy</code>
			1226, 1235
			<code>\pgfpoinyscale</code>
			1226, 1235
			<code>\pgfpointtransformed</code>
		
		
			<code>\pgfqpoint</code>
			192, 193, 205,
			206, 1285, 1287, 1289, 1293,
			1297, 1300, 1304, 1308, 1317,
			1318, 1319, 1320, 1321, 1322,
			1323, 1324, 1325, 1326, 1327,
			1328, 1366, 1367, 1368, 1369,
			1370, 1371, 1372, 1373, 14541,
			14542, 14543, 14544, 14567,
			14570, 14573, 14577, 14581,
			14585, 14661, 14662, 14663,
			14664, 14694, 14695, 14696,
			14697, 14811, 14812, 14813,
			14814, 16086, 16087, 16089,
			16090, 16107, 16154, 16155,
			16156, 16157, 16215, 16216,
			16217, 16218, 16222, 16223,
			16224, 16225, 16229, 16230,
			16231, 16232, 16236, 16237,
			16238, 16239, 16265, 16269,
			16302, 16303, 16304, 16305,
			16358, 16359, 16360, 16361,
			16369, 16437, 16438, 16439,
			16440, 16482, 16483, 16484,
			16485, 16486, 16535, 16536,
			16537, 16538, 16597, 16598,

<code>\segment</code>	14178, 14371	<code>\split@ew</code>	14228, 14234, 14340	15081, 15089, 15133, 15206,
<code>\setcounter</code> 13456, 13457, 14474, 17720		<code>\split@footer</code>	14202, 14369	15260, 16022, 16025, 17816
<code>\settosave</code>	90	<code>\split@get@init</code> 14138, 14143, 14144		sub pic actions (key)
<code>\sh@dechit</code>	15016, 15021	<code>\split@getboard</code>	14125, 14215	<code>\sulx</code>
<code>\shadechit</code>	15015	<code>\split@getcoords</code>	14145, 14367	<code>\suly</code>
<code>\shiftScalePath</code>	13662, 13663	<code>\split@getem</code> 14115, 14126, 14147,		<code>\swp</code>
<code>\slrx</code>	14150, 14178	14162, 14165, 14168, 14171		13874, 13875, 13876, 13877
<code>\slry</code>	14151, 14178	<code>\split@getinit</code>	14142, 14337	<code>\symbol</code>
<code>\sofmark</code>	18082	<code>\split@header</code>	14183, 14334	14593, 14637, 14710, 14861
<code>\south</code>	16378,	<code>\split@img</code>	14199, 14305, 14336	<code>\symid</code>
16381, 16382, 16383, 16386,		<code>\split@init</code>	14209, 14336	14709, 14711, 14713
16394, 16758, 16771, 16774,		<code>\split@lrx</code>	14121,	
16775, 16776, 16779, 16787		14122, 14129, 14150, 14165		T
<code>\southeast</code>	1322, 1336,	<code>\split@lry</code>	14121,	<code>\terrainmark</code>
1346, 1358, 16106, 16112,		14123, 14130, 14151, 14168		13513, 13514, 13515, 13516
16117, 16118, 16119, 16120,		<code>\split@margin</code>	14186, 14269,	<code>\testpath</code>
16124, 16132, 16138, 16479,		14275, 14280, 14285, 14290		18089, 18090
16490, 16498, 16499, 16500,		<code>\split@ncol</code>	14302, 14331,	<code>\text</code>
16501, 16505, 16513, 16519		14339, 14353, 14354, 14366		14920, 14921, 14922
<code>\southeastedge</code> ...	1328, 1352, 1364	<code>\split@nrow</code>	14303,	<code>\textheight</code>
<code>\southedge</code>	1324, 1348, 1360	14332, 14338, 14346, 14365		14229,
<code>\southwest</code>	192, 205,	<code>\split@off</code> 14140, 14141, 14143, 14144		14246, 14257, 14260, 14261,
1321, 1335, 1345, 1357, 17981		<code>\split@out</code>	14301, 14334	14263, 14296, 14297, 14330
<code>\southwestedge</code> ...	1327, 1351, 1363	<code>\split@ov</code>	14304, 14333,	<code>\textsuperscript</code>
<code>\space</code> ...	362, 364, 487, 488, 489,	14340, 14350, 14358, 14367		31
490, 492, 495, 589, 677, 698,		<code>\split@ph</code>	14226, 14233	<code>\textwidth</code>
706, 707, 709, 710, 711, 712,		<code>\split@pw</code>	14225, 14233	14228,
719, 720, 721, 722, 723, 739,		<code>\split@scale</code> ...	14200, 14210, 14300	14245, 14256, 14258, 14259,
764, 782, 975, 981, 983, 1001,		<code>\split@standalonetrue</code>	14265	14262, 14297, 14298, 14330
1021, 13460, 14131, 14161,		<code>\split@text@dim</code>	14255,	<code>\thepage</code>
14164, 14167, 14170, 14179,		14275, 14280, 14285, 14290		485, 490
14187, 15044, 15065, 15072,		<code>\split@tmp</code>	14114,	<code>\thisname</code>
15081, 15089, 15110, 15151,		14134, 14135, 14136, 14137,		14613, 14719, 14726, 14739,
15172, 15182, 15203, 15206,		14217, 14218, 14221, 14222,		14746, 14753, 14760, 14863,
15215, 15223, 15279, 15302,		14293, 14295, 14296, 14298		17749, 17889, 17900, 17975
15330, 15531, 15532, 17741		<code>\split@ulx</code>	14117, 14118,	<code>\ti</code>
<code>\split@adj</code>	14133,	14119, 14127, 14148, 14162		515,
14162, 14165, 14168, 14171		<code>\split@uly</code> 14117, 14128, 14149, 14171		539, 549, 574, 596, 603, 613,
<code>\split@bh</code>	14222,	<code>\split@w</code>	14131,	15106, 15110, 15112, 15114,
14223, 14232, 14251, 14340		14176, 14182, 14187, 14189,		15141, 15151, 15182, 15199,
<code>\split@blrx</code>	14129,	14199, 14200, 14204, 14206		15203, 15237, 15239, 15269,
14132, 14152, 14217, 14232		<code>\splitboard</code>	14097, 14316	15279, 15330, 15392, 15412,
<code>\split@blry</code>	14130,	<code>\st@ckchits</code>	15035, 15037	15413, 15487, 15505, 15532
14132, 14155, 14221, 14232		<code>\stackchits</code>	15034, 15970	TikZ keys:
<code>\split@bulx</code>	14127,	<code>\stackmark</code>	15968	<code>/chit/bevel</code>
14132, 14153, 14217, 14232		<code>\stackrel</code>	14920, 14921	<code>/chit/extra</code>
<code>\split@buly</code>	14128,	<code>\state</code>	656, 663, 670, 13529,	<code>/chit/factors</code>
14132, 14154, 14221, 14232		13531, 13549, 13565, 13572		<code>/chit/full</code>
<code>\split@bw</code>	14218,	<code>\string</code>	108, 149, 14178,	<code>/chit/id</code>
14219, 14232, 14250, 14340		14190, 14191, 14192, 14193,		<code>/chit/left</code>
<code>\split@calcout</code>		14194, 14195, 14196, 14197,		<code>/chit/lower left</code>
... 14181, 14182, 14184, 14207		14199, 14200, 14204, 15072,		<code>/chit/lower right</code>
<code>\split@eh</code>	14229, 14234, 14340			<code>/chit/right</code>
				<code>/chit/setup</code>
				<code>/chit/symbol</code>
				<code>/chit/upper left</code>
				<code>/chit/upper right</code>
				<code>/tikz/chit</code>
				<code>/tikz/chit/1 factor</code> ...
				<code>/tikz/chit/2 factors</code> ...
				<code>/tikz/chit/3 factors</code> ...
				<code>/tikz/chit/4 factors</code> ...

15435, 15446, 15481, 15517, 15522, 15536, 15537, 15543, 15544, 15553, 15555, 15571	<code>\wg@pic@all</code> . 121 , 122 , 1418 , 1459 , 1617 , 14706 , 14721 , 14728 , 14741 , 14748 , 14755 , 14762 , 14769 , 14775 , 17829 , 17837 , 17843 , 17849 , 17855 , 17901	14785 , 14788 , 14790 , 14795 , 14798 , 14800 , 14810 , 14811 , 14812 , 14813 , 14814 , 15509 , 15510 , 15513 , 15514 , 15518 , 15519 , 16106 , 16107 , 16109 , 16119 , 16120 , 16124 , 16128 , 16132 , 16136 , 16153 , 16154 , 16155 , 16156 , 16157 , 16211 , 16212 , 16215 , 16218 , 16222 , 16225 , 16230 , 16231 , 16237 , 16238 , 16264 , 16265 , 16268 , 16269 , 16299 , 16300 , 16304 , 16305 , 16354 , 16358 , 16359 , 16368 , 16369 , 16371 , 16381 , 16382 , 16385 , 16390 , 16393 , 16398 , 16436 , 16437 , 16438 , 16439 , 16440 , 16443 , 16444 , 16445 , 16447 , 16448 , 16479 , 16482 , 16483 , 16485 , 16486 , 16500 , 16501 , 16505 , 16509 , 16513 , 16517 , 16534 , 16535 , 16537 , 16593 , 16595 , 16597 , 16599 , 16605 , 16607 , 16611 , 16613 , 16619 , 16621 , 16675 , 16680 , 16681 , 16682 , 16683 , 16743 , 16746 , 16747 , 16756 , 16759 , 16760 , 16762 , 16763 , 16774 , 16775 , 16778 , 16783 , 16786 , 16791 , 16830 , 16831 , 16832 , 16833 , 16834 , 16835 , 16836 , 16837 , 16838 , 16936 , 16937 , 16940 , 16943 , 16947 , 16950 , 16955 , 16956 , 16962 , 16963 , 17024 , 17025 , 17029 , 17030 , 17085 , 17088 , 17089 , 17090 , 17152 , 17155 , 17156 , 17157 , 17159 , 17162 , 17163 , 17164 , 17166 , 17169 , 17170 , 17171 , 17173 , 17176 , 17177 , 17178 , 17204 , 17205 , 17213 , 17214 , 17239 , 17241 , 17243 , 17245 , 17248 , 17249 , 17260 , 17261 , 17290 , 17292 , 17299 , 17300 , 17301 , 17306 , 17307 , 17315 , 17316 , 17320 , 17323 , 17328 , 17329 , 17381 , 17383 , 17391 , 17400 , 17401 , 17458 , 17460 , 17466 , 17469 , 17470 , 17496 , 17498 , 17500 , 17502 , 17505 , 17506 , 17517 , 17518 , 17765 , 17767 , 17768 , 17769 , 17770 , 17771 , 17772 , 17777 , 17778 , 17779 , 17910 , 17912 ,
<code>\wg@dbg</code> 58 , 60 , 68 , 70 , 74 , 77 , 84 , 96 , 100 , 102 , 108 , 115 , 120 , 123 , 129 , 137 , 141 , 143 , 149 , 152 , 155 , 161 , 225 , 227 , 229 , 302 , 306 , 310 , 320 , 322 , 331 , 337 , 348 , 361 , 649 , 652	<code>\wg@protocolsizes</code> 176 , 177 , 189 , 202	
<code>\wg@dice</code> 950 , 952	<code>\wg@pt@to@cm</code> 219 , 220 , 222 , 223 , 230 , 231 , 240 , 241 , 628 , 629 , 758 , 759 , 775 , 776 , 14218 , 14222 , 14225 , 14226 , 14228 , 14229	
<code>\wg@drop@margin</code> 498 , 501 , 502 , 537 , 594 , 1025 , 15909 , 15917 , 15919 , 15921 , 15931	<code>\wg@r@ndom@id</code> 368 , 14600 , 17730	
<code>\wg@dsixdotfalse</code> 15727	<code>\wg@record@path@name</code> 676 , 790	
<code>\wg@export@box</code> 742 , 780	<code>\wg@resetbb</code> 169 , 170 , 187 , 200	
<code>\wg@gencolorm@rkers</code> 847 , 875 , 891	<code>\wg@row</code> 15382 , 15389 , 15425 , 15446 , 15482 , 15538 , 15552 , 15554	
<code>\wg@gennumberm@rkers</code> 804 , 832	<code>\wg@s@vefalse</code> 117 , 270 , 274	
<code>\wg@get@bb</code> 243 , 252 , 638 , 14009	<code>\wg@s@vetrue</code> 273	
<code>\wg@get@global@nchor</code> 233 , 642 , 644	<code>\wg@scale</code> 303 , 306 , 307 , 313 , 13218 , 13219 , 17767 , 17769 , 17770	
<code>\wg@get@nchor</code> 224 , 244 , 247 , 651	<code>\wg@scaled</code> 304 , 317 , 329	
<code>\wg@getscale</code> 293 , 305 , 314 , 17766	<code>\wg@set@corners@rched</code> 280 , 330 , 332	
<code>\wg@hoob</code> 15186 , 15187 , 15193	<code>\wg@star@hoob</code> 15186 , 15189	
<code>\wg@ignore@sub@nchorfalse</code> 72 , 17863 , 17882 , 17923	<code>\wg@star@oob</code> 15094 , 15097	
<code>\wg@ignore@sub@nchortrue</code> 17782 , 17866	<code>\wg@sub@nchor</code> 71 , 73 , 14525 , 17751 , 17752 , 17753 , 17754 , 17755 , 17756 , 17757 , 17758 , 17759 , 17760 , 17761 , 17762 , 17764 , 17776 , 17909 , 17967	
<code>\wg@jac</code> 301 , 302 , 303	<code>\wg@tmp</code> 299 , 300 , 307 , 308 , 309 , 310 , 318 , 320 , 321 , 322 , 330 , 331 , 332 , 15672 , 15673 , 15674 , 15676	
<code>\wg@jaca</code> 295 , 301 , 15668 , 15675	<code>\wg@tmp@a</code> 211 , 213	
<code>\wg@jacb</code> 296 , 301 , 15669 , 15675	<code>\wg@tmp@b</code> 211 , 213	
<code>\wg@jacc</code> 297 , 301 , 15670 , 15675	<code>\wg@tmp@bg</code> 355 , 357 , 363	
<code>\wg@jacd</code> 298 , 301 , 15671 , 15675	<code>\wg@tmp@c</code> 211 , 213	
<code>\wg@logo@text@content</code> 21 , 57	<code>\wg@tmp@d</code> 211 , 213	
<code>\wg@lv</code> 338	<code>\wg@tmp@fg</code> 354 , 361	
<code>\wg@lw</code> 339 , 340	<code>\wg@tmpa</code> 86 , 1278 , 1285 , 1287 , 1291 , 1293 , 1295 , 1297 , 1304 , 1306 , 1307 , 1308 , 1417 , 1418 , 1425 , 1430 , 1433 , 1438 , 1443 , 1446 , 1458 , 1459 , 1581 , 1615 , 1617 , 1623 , 1628 , 14510 , 14516 , 14540 , 14541 , 14542 , 14543 , 14544 , 14549 , 14552 , 14555 , 14560 , 14567 , 14570 , 14572 , 14573 , 14575 , 14577 , 14579 , 14580 , 14581 , 14585 , 14660 , 14661 , 14662 , 14663 , 14664 , 14693 , 14694 , 14695 , 14696 , 14697 , 14705 , 14706 , 14732 , 14734 ,	
<code>\wg@lw@scale</code> 309		
<code>\wg@lw@scaled</code> 292 , 318 , 319		
<code>\wg@n@to@p@th</code> 17723		
<code>\wg@nchor</code> 66 , 67 , 14719 , 14726 , 14739 , 14746 , 14753 , 14760 , 17889 , 17900		
<code>\wg@node</code> 132 , 133 , 162 , 1626		
<code>\wg@node@all</code> 153 , 154		
<code>\wg@nstar@hoob</code> 15187 , 15190		
<code>\wg@nstar@oob</code> 15095 , 15098		
<code>\wg@notrelevantforpathsizfalse</code> 169 , 188 , 201		
<code>\wg@oob</code> 15094 , 15095 , 15101		
<code>\wg@oob@invfalse</code> 15091 , 15095 , 15187		
<code>\wg@oob@invtrue</code> 15094 , 15186		
<code>\wg@path</code> 660 , 667 , 674 , 677		
<code>\wg@pgfsetcorners@rched</code> 279		
<code>\wg@pic</code> 91 , 92 , 130 , 1581 , 17890		

