

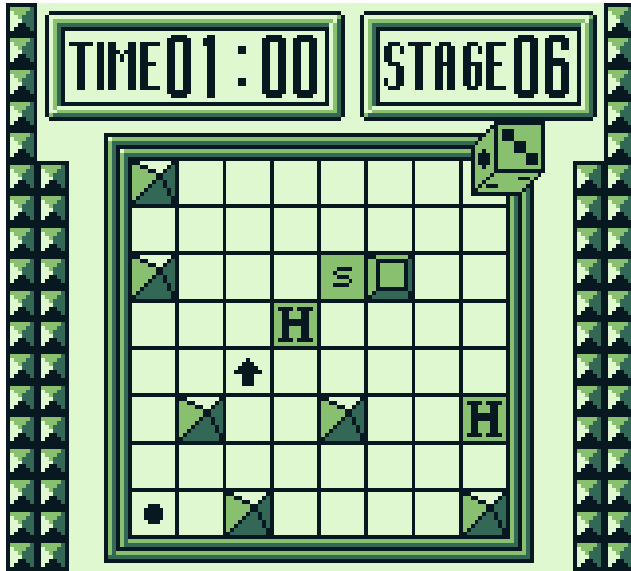
Puzzlemaker's reference for Rolling Polyhedron

Part 1: Plane rollers

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Rolling puzzles often feature *cubes*, rarely other types of *dice*.

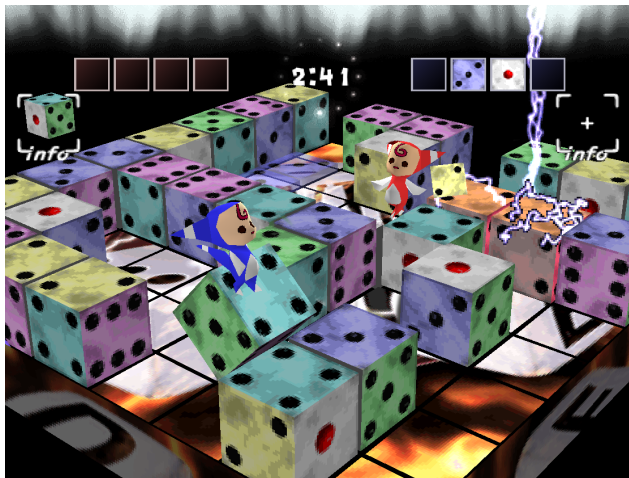
This document will list alternative shapes ([regular-faced convex polyhedrons](#)) that can be used on specific [n-uniform tilings](#) (tessellations using regular polygons as tiles). Such a pair is called a **Roller**.



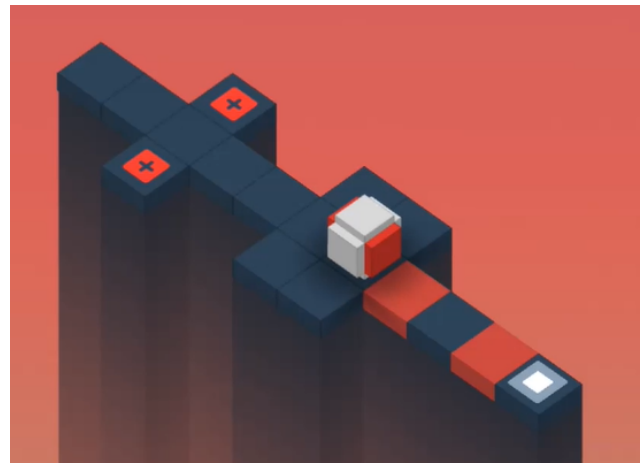
(a) *Korodice* (1990)



(b) *Zelda Oracle of Ages* (2001)



(c) *Devil Dice* (1998)



(d) *Rubek* (2016)

Figure 1: Examples of face-matching rolling cube puzzles

Polyhedrons list includes [Platonic solids](#), [Archimedean solids](#), [n-Prisms](#) and [Antiprisms](#). Polyhedron with the format JXX are called [Johnson solids](#). With chirals. Dataset: [Polyhedron dual as python dictionaries](#).

Tilings are named by their [vertex configuration](#) orbits notation. So far, I used the first 90 tilings of this [Catalog](#). Dataset: [Tilings as python dictionaries](#).

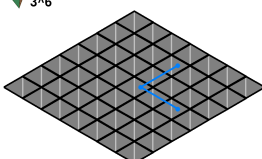

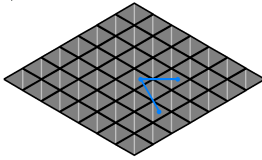
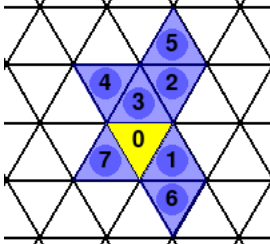
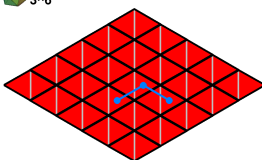
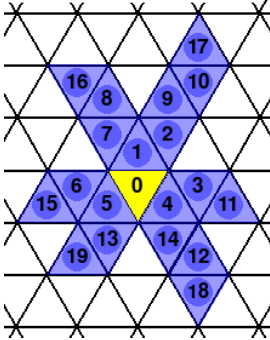
1 Stable plane rollers

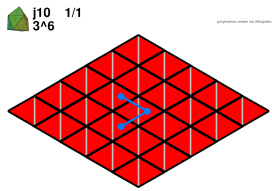
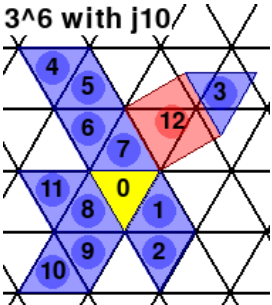
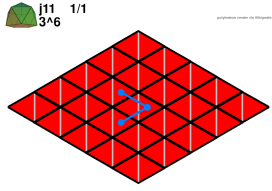
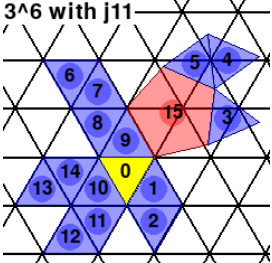
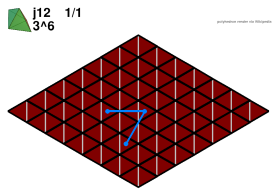
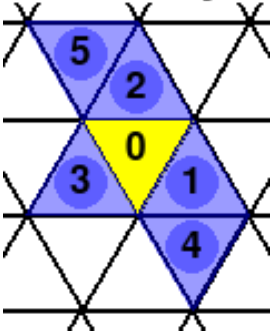
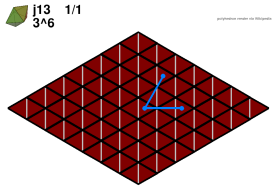
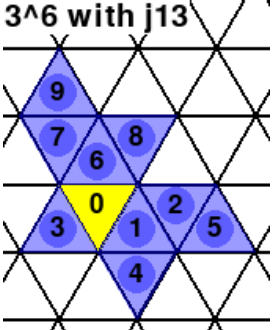
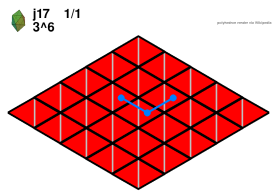
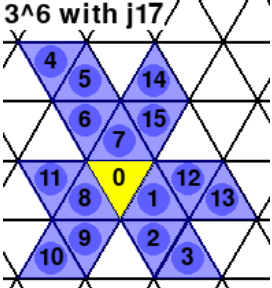
A plane roller is a polyhedron that covers the whole plane by rolling on a tiling. A stable plane roller is a plane roller for every starting position.

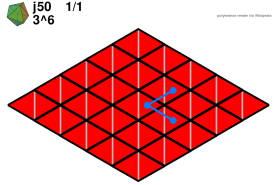
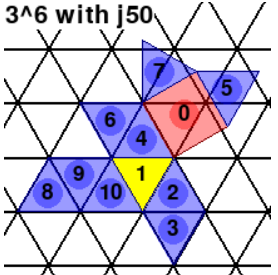
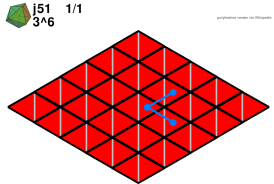
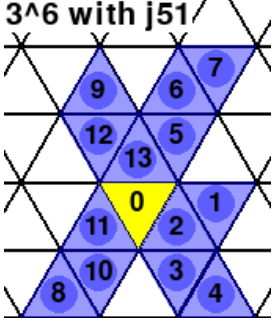
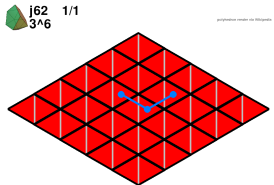
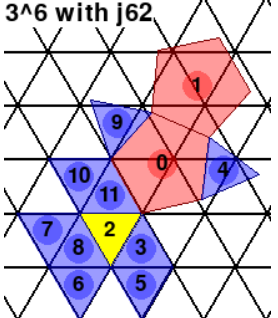
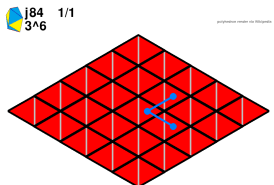
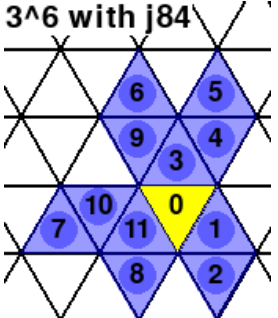
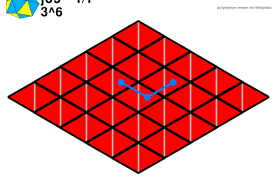
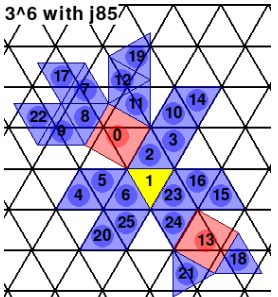
1.1 Legend


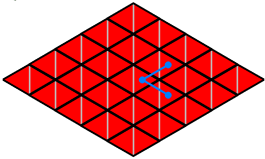
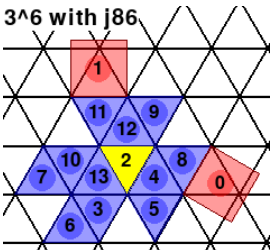

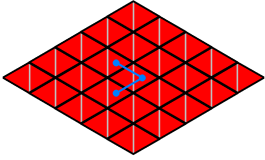
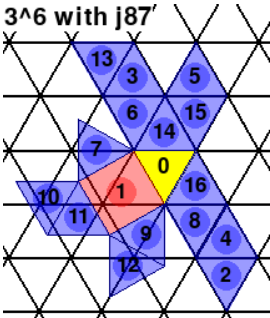

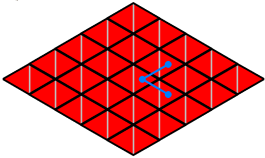
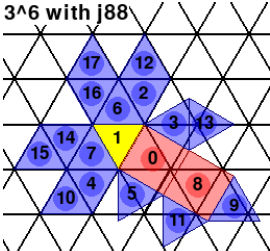

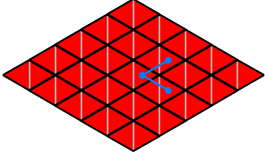
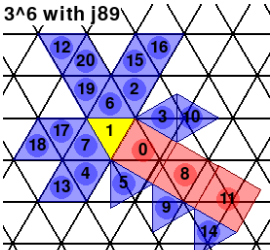

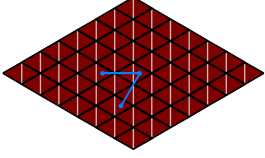
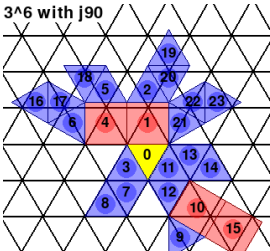

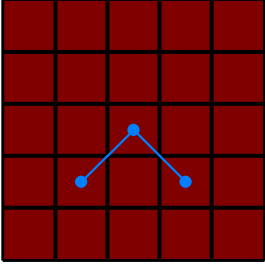
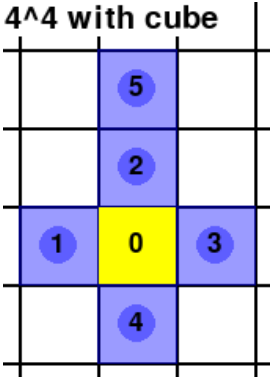
- Grey cells: reached areas
- Brown cells: areas reachable with every compatible faces from the polyhedron (ex. all triangles of the pyramid)
- Red cells: areas reachable with every compatible faces from the polyhedron in all orientations (ex. all triangles of the pyramid in all orientations)
- On the right: preview of the net of the polyhedron, with used faces (blue), and unused faces (red).

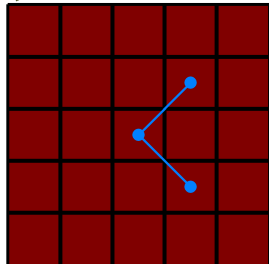
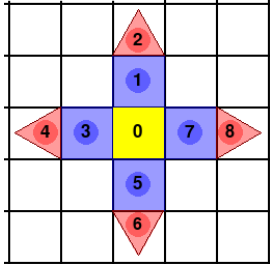
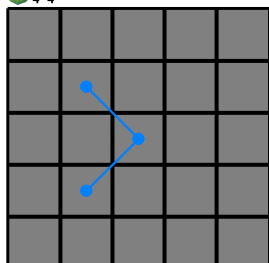
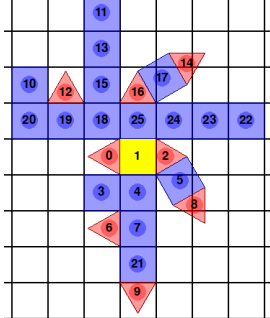
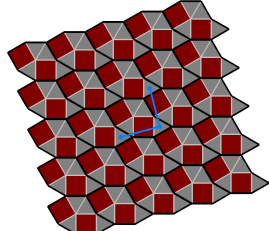
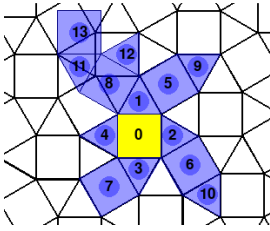
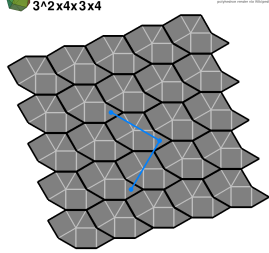
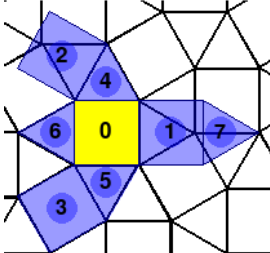
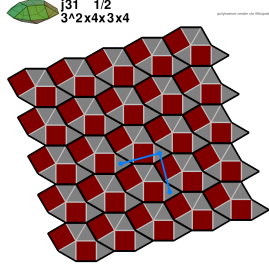
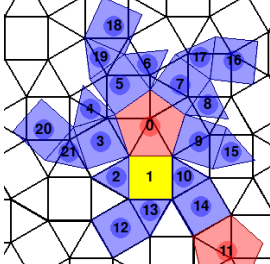
1.2 Table

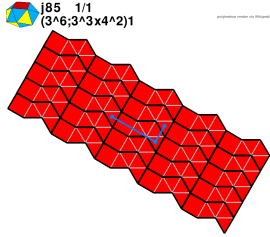
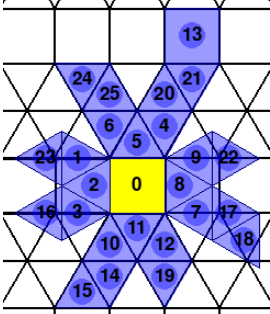
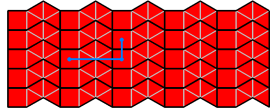
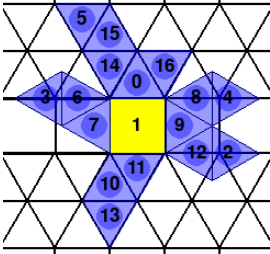
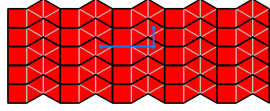
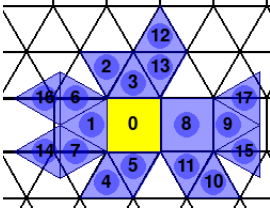
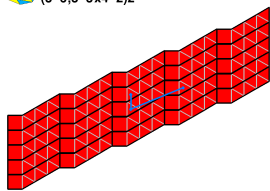
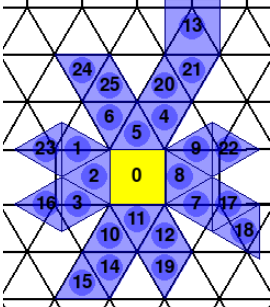
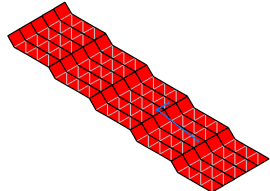
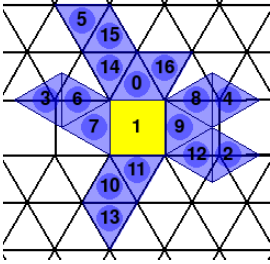
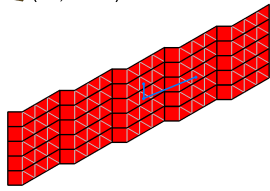
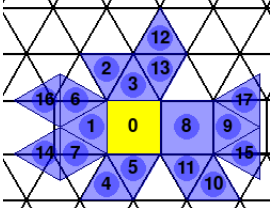
Roller Pair	Reachability	Faces
<p>tetrahedron 3^6</p>	<p>tetrahedron 1/3 3^6</p> 	<p>3⁶ with tetrahedron</p> 
<p>octahedron 3^6</p>	<p>octahedron 1/2 3^6</p> 	<p>3⁶ with octahedron</p> 
<p>icosahedron 3^6</p>	<p>icosahedron 1/1 3^6</p> 	<p>3⁶ with icosahedron</p> 

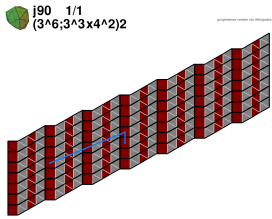
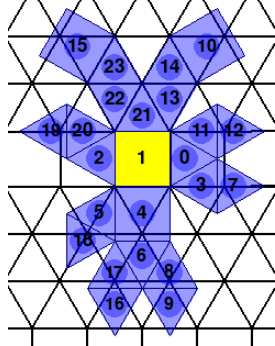
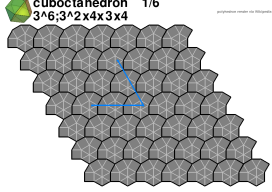
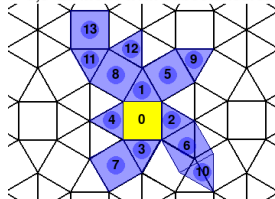
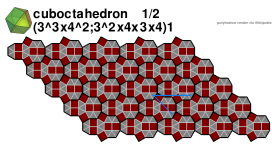
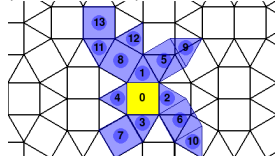
<p>j10 3⁶</p>		<p>3⁶ with j10/</p> 
<p>j11 3⁶</p>		<p>3⁶ with j11</p> 
<p>j12 3⁶</p>		<p>3⁶ with j12</p> 
<p>j13 3⁶</p>		<p>3⁶ with j13</p> 
<p>j17 3⁶</p>		<p>3⁶ with j17/</p> 

<p>j50 3⁶</p>		<p>3⁶ with j50</p> 
<p>j51 3⁶</p>		<p>3⁶ with j51</p> 
<p>j62 3⁶</p>		<p>3⁶ with j62</p> 
<p>j84 3⁶</p>		<p>3⁶ with j84</p> 
<p>j85 3⁶</p>		<p>3⁶ with j85</p> 

<p>j86 3^6</p>	<p> $\frac{1}{1}$ </p>	<p>3⁶ with j86 </p>
<p>j87 3^6</p>	<p> $\frac{1}{1}$ </p>	<p>3⁶ with j87' </p>
<p>j88 3^6</p>	<p> $\frac{1}{1}$ </p>	<p>3⁶ with j88 </p>
<p>j89 3^6</p>	<p> $\frac{1}{1}$ </p>	<p>3⁶ with j89 </p>
<p>j90 3^6</p>	<p> $\frac{1}{1}$ </p>	<p>3⁶ with j90 </p>
<p>cube 4^4</p>	<p> $\frac{1}{1}$ </p>	<p>4⁴ with cube </p>

<p>j8 4⁴</p>	<p>j8 1/1 4x4</p> 	<p>4⁴ with j8</p> 
<p>j37 4⁴</p>	<p>j37 1/1 4x4</p> 	<p>4⁴ with j37</p> 
<p>cuboctahedron 3²x4x3x4</p>	<p>cuboctahedron 1/2 3²x4x3x4</p> 	<p>3²x4x3x4 with cuboctahedron</p> 
<p>j26 3²x4x3x4</p>	<p>j26 1/2 3²x4x3x4</p> 	<p>3²x4x3x4 with j26</p> 
<p>j31 3²x4x3x4</p>	<p>j31 1/2 3²x4x3x4</p> 	<p>3²x4x3x4 with j31</p> 

<p>j85 $(3^6; 3^3x4^2)1$</p>	 <p>j85 1/1 $(3^6; 3^3x4^2)1$</p>	<p>$(3^6; 3^3x4^2)1$ with j85</p> 
<p>j87 $(3^6; 3^3x4^2)1$</p>	 <p>j87 1/1 $(3^6; 3^3x4^2)1$</p>	<p>$(3^6; 3^3x4^2)1$ with j87</p> 
<p>j88 $(3^6; 3^3x4^2)1$</p>	 <p>j88 1/1 $(3^6; 3^3x4^2)1$</p>	<p>$(3^6; 3^3x4^2)1$ with j88</p> 
<p>j85 $(3^6; 3^3x4^2)2$</p>	 <p>j85 1/1 $(3^6; 3^3x4^2)2$</p>	<p>$(3^6; 3^3x4^2)2$ with j85</p> 
<p>j87 $(3^6; 3^3x4^2)2$</p>	 <p>j87 1/1 $(3^6; 3^3x4^2)2$</p>	<p>$(3^6; 3^3x4^2)2$ with j87</p> 
<p>j88 $(3^6; 3^3x4^2)2$</p>	 <p>j88 1/1 $(3^6; 3^3x4^2)2$</p>	<p>$(3^6; 3^3x4^2)2$ with j88</p> 

<p>j90 $(3^6; 3^3x4^2)2$</p>	 <p>j90 1/1 $(3^6; 3^3x4^2)2$</p>	<p>$(3^6; 3^3x4^2)2$ with j90-</p> 
<p>cuboctahedron $3^6; 3^2x4x3x4$</p>	 <p>cuboctahedron 1/6 $3^6; 3^2x4x3x4$</p>	<p>$3^6; 3^2x4x3x4$ with cuboctahedron</p> 
<p>cuboctahedron $(3^3x4^2; 3^2x4x3x4)1$</p>	 <p>cuboctahedron 1/2 $(3^3x4^2; 3^2x4x3x4)1$</p>	<p>$(3^3x4^2; 3^2x4x3x4)1$ with cuboctahedron</p> 

1.3 Highlights

On the square tiling: The **cube** can roll on the square tiling with all faces. However, each face can only reach every tile in two given orientations. In this context J8 behaves like a cube with a missing face and can also roll the tiling. J37 might be more adapted for action-games.

Many shapes can roll the triangular tiling. One shape to highlight: J12 because it is very similar to the cube: face-complete rolling, and only 6 faces.

Tetrahedron and Octahedron do not have face-completeness on the tiling so they are not suited for complex face-matching puzzles, which might explain their lack of use despite being an easy to guess plane roller.

Tilings with rows of squares interrupted by triangles have a lot of potential polyhedron pairings.

2 Unstable plane rollers

Unstable rollers have some tiles that are not guaranteed to produce a plane rolling pattern. Starting on some tiles with some face on some orientation might lead to the shape getting stuck in a smaller pattern. It is recommended to start on a stable tile (second column) or in a known starting position (right column).

2.1 Legend

Rolling area (left)

- Grey cells: reached areas
- Brown cells: areas reached with every compatible faces from the polyhedron
- Red cells: areas reached with every compatible faces from the polyhedron in all orientations

Stability graph (middle)

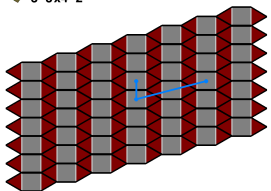
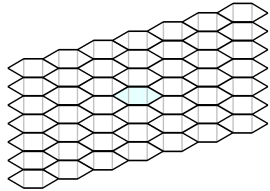
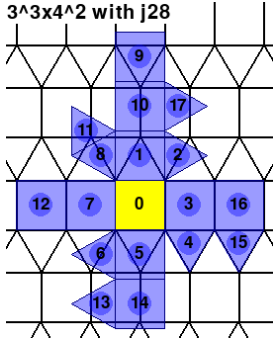
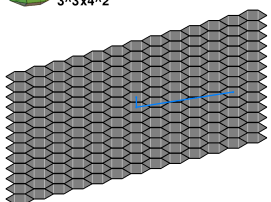
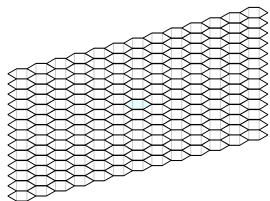
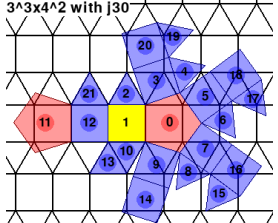
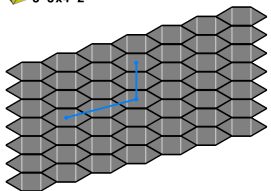
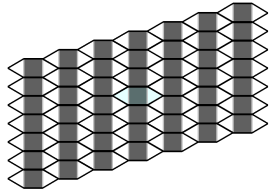
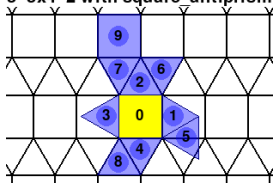
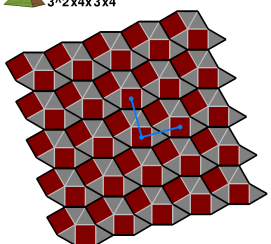
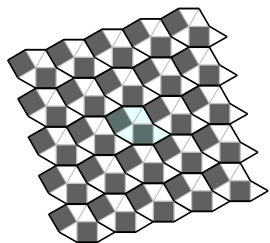

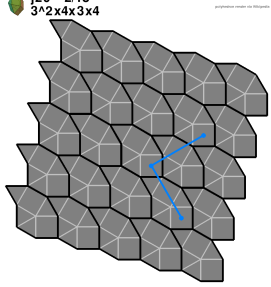
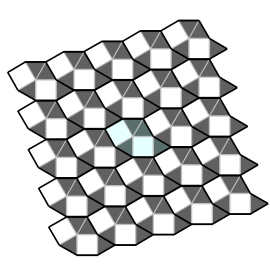
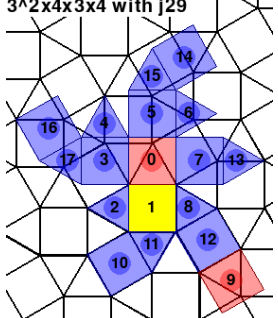
- Grey cells: stable cells: the structure of the rolling graph does not change depending on the face/orientation that starts on this area
- White cells: unstable cells, might lead to the roller getting stuck in an area/band

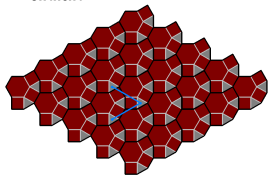
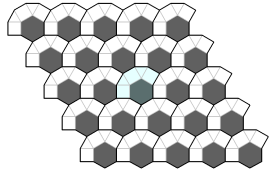
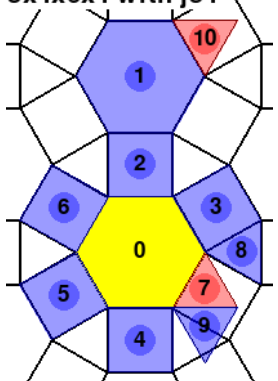
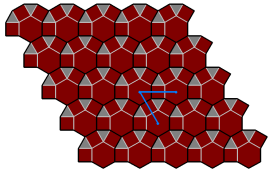
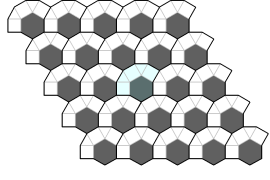
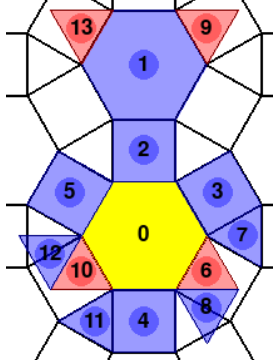
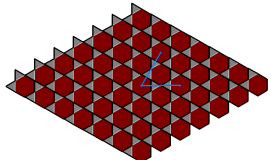
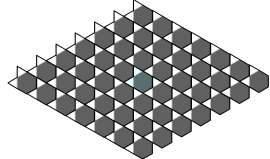
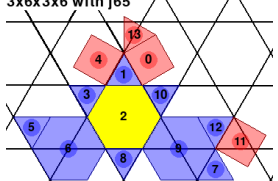
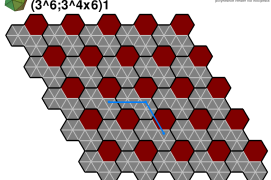
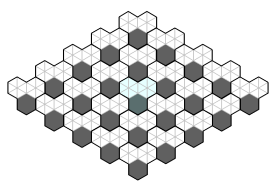
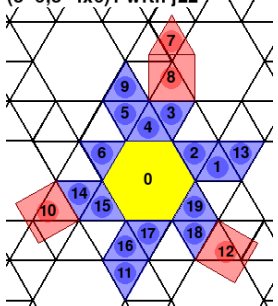
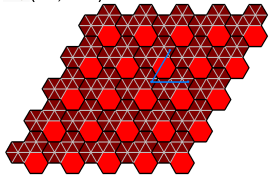
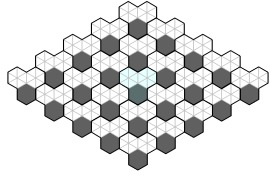
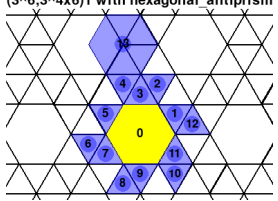
Starting position (right)

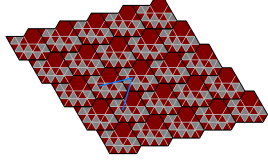
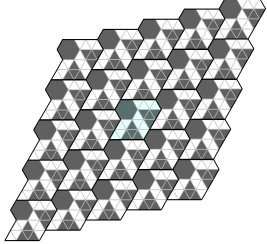
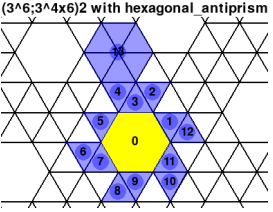
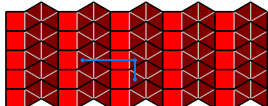
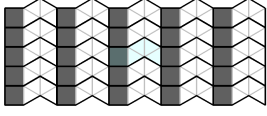
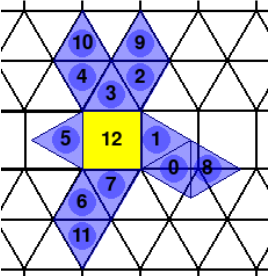
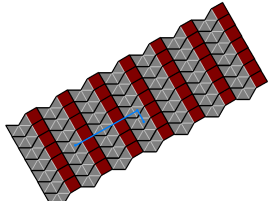
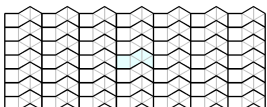
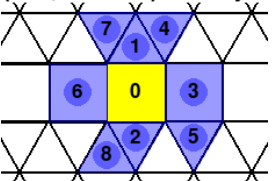
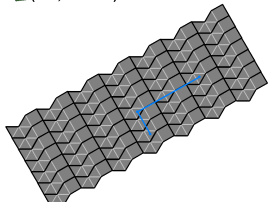
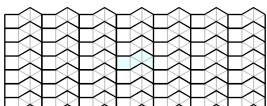
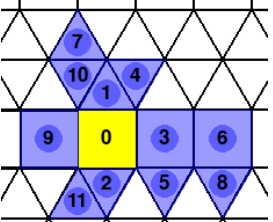
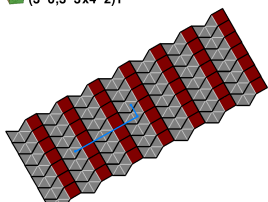
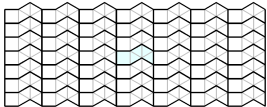
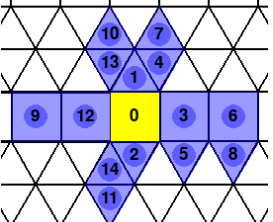
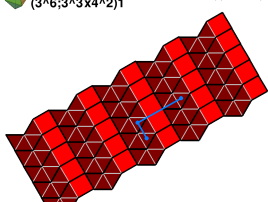
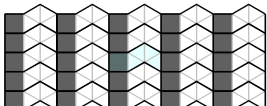
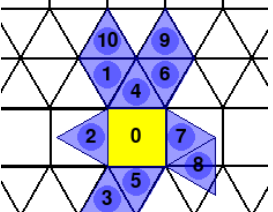
- Yellow face: example of starting face and orientation in the net
- Red face: unused face

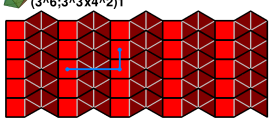
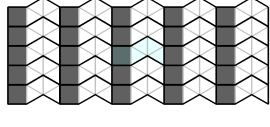
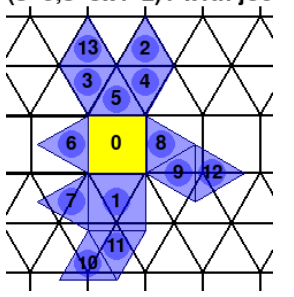
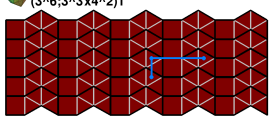
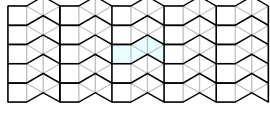
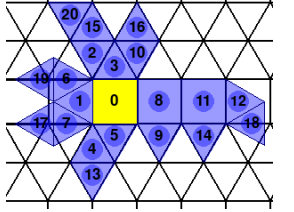
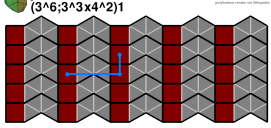
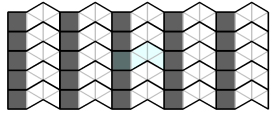
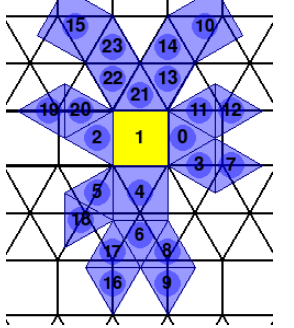
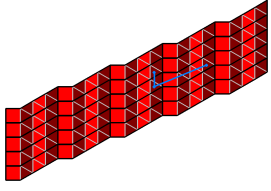
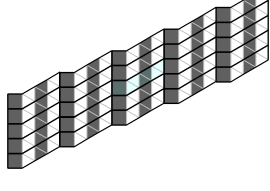
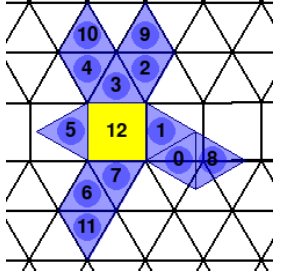
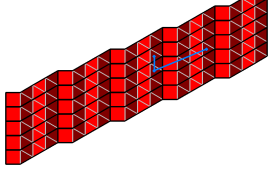
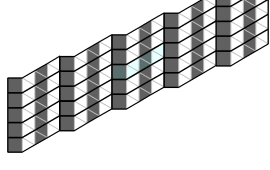
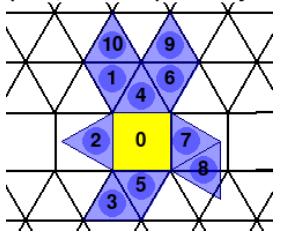
2.2 Table

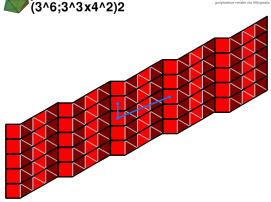
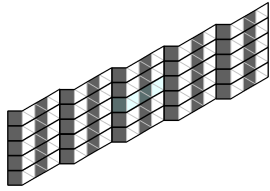
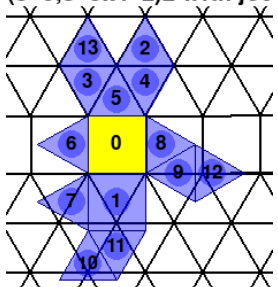
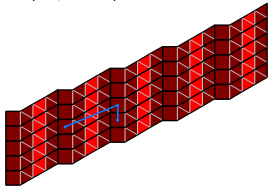
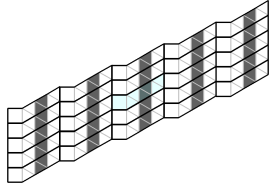
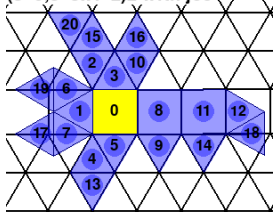
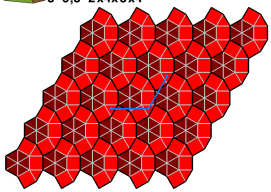
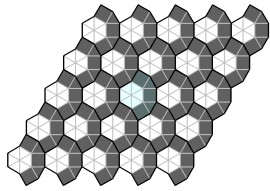
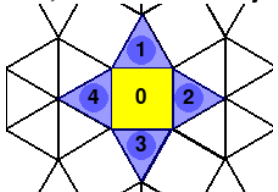
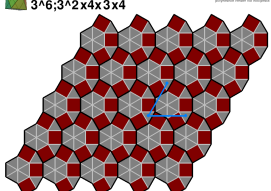
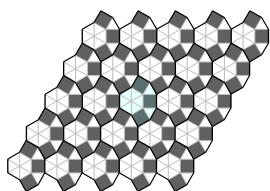
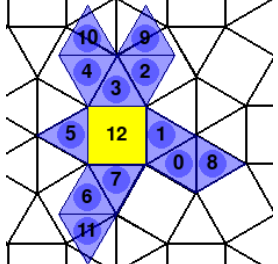
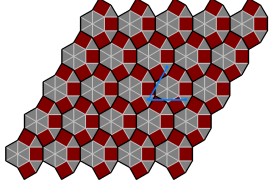
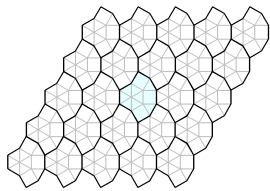

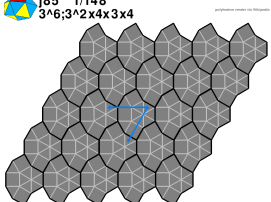
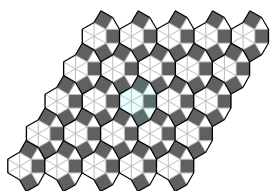
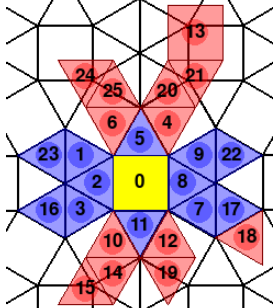
Roller Pair	Reachability	Stability	Faces
<p>hexagonal antiprism</p> 3^4x6	<p>hexagonal_antiprism 1/38 3^4x6</p>		<p>3^4x6 with hexagonal antiprism</p>
<p>j27</p> 3^3x4^2	<p>j27 14/26 3^3x4^2</p>		<p>3^3x4^2 with j27</p>

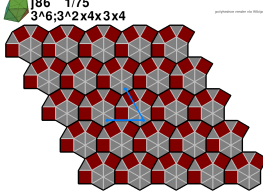
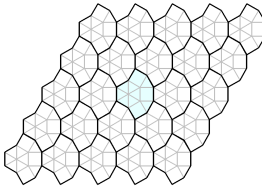
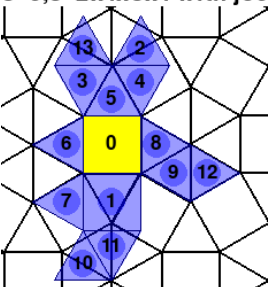
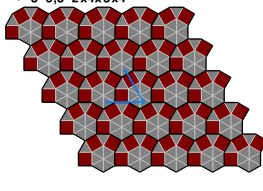
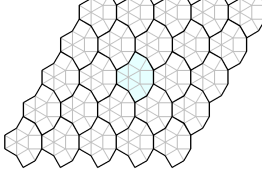
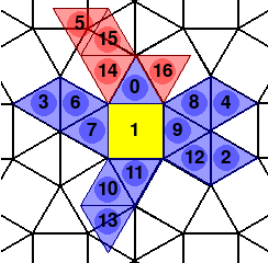
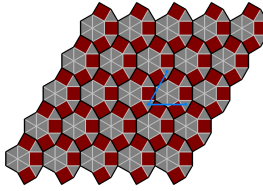
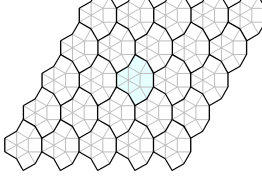
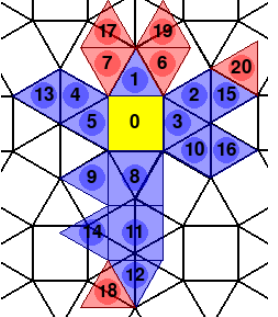
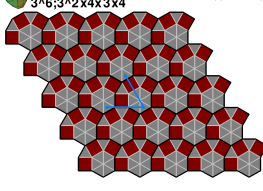
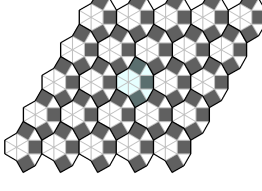
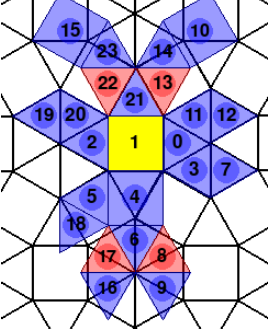
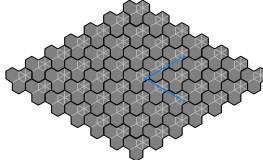
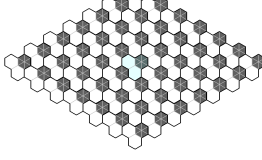
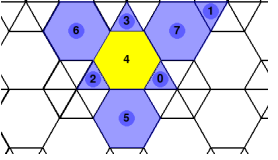
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<p>j30 3^3x4^2</p>	<p>j30 22/42 3^3x4^2</p> 		<p>3^3x4^2 with j30</p> 
<p>square antiprism 3^3x4^2</p>	<p>square_antiprism 1/17 3^3x4^2</p> 		<p>3^3x4^2 with square_antiprism</p> 
<p>j1 $3^2x4x3x4$</p>	<p>j1 1/20 $3^2x4x3x4$</p> 		<p>$3^2x4x3x4$ with j1</p> 
<p>j29 $3^2x4x3x4$</p>	<p>j29 2/18 $3^2x4x3x4$</p> 		<p>$3^2x4x3x4$ with j29</p> 

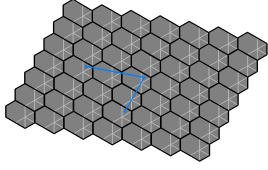
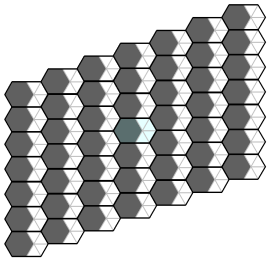
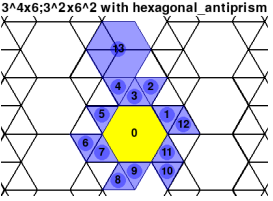
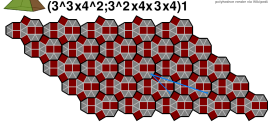
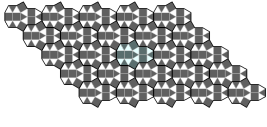
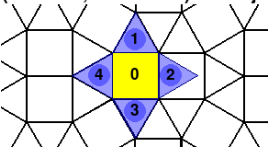
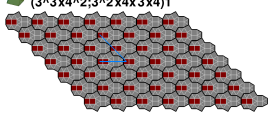

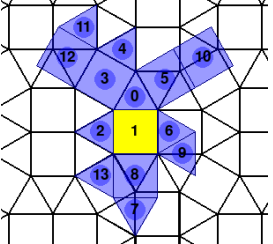
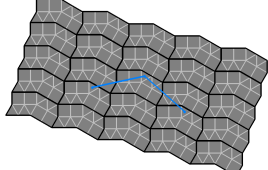
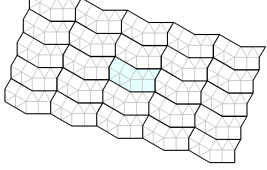
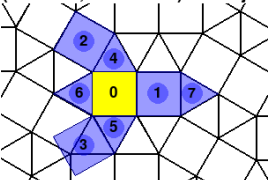
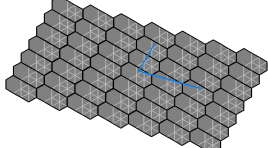
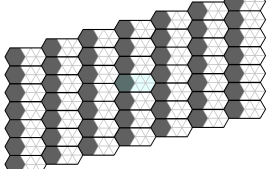
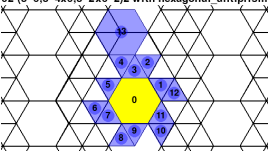
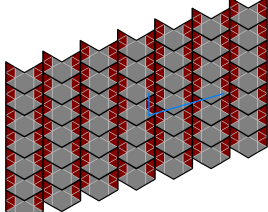
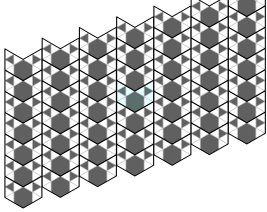
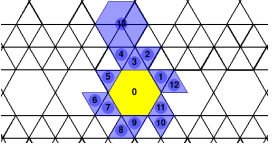
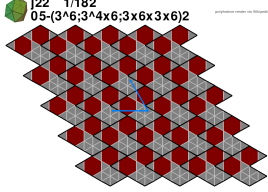
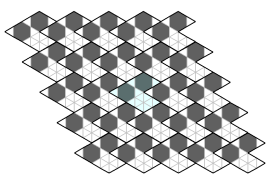
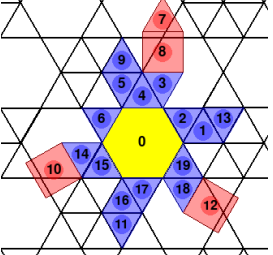
<p>j54 3x4x6x4</p>	<p>j54 1/44 3x4x6x4</p> 		<p>3x4x6x4 with j54</p> 
<p>j56 3x4x6x4</p>	<p>j56 1/50 3x4x6x4</p> 		<p>3x4x6x4 with j56</p> 
<p>j65 3x6x3x6</p>	<p>j65 1/8 3x6x3x6</p> 		<p>3x6x3x6 with j65</p> 
<p>j22 (3⁶; 3⁴x6)1</p>	<p>j22 1/129 (3⁶; 3⁴x6)1</p> 		<p>(3⁶; 3⁴x6)1 with j22</p> 
<p>hexagonal antiprism (3⁶; 3⁴x6)1</p>	<p>hexagonal antiprism 1/73 (3⁶; 3⁴x6)1</p> 		<p>(3⁶; 3⁴x6)1 with hexagonal antiprism</p> 

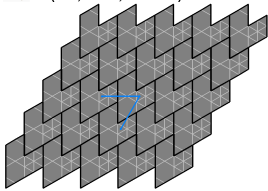
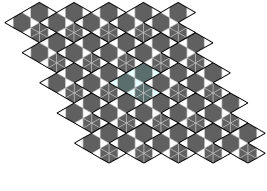
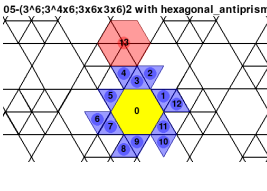
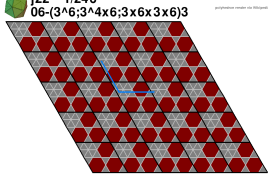
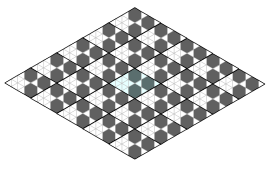
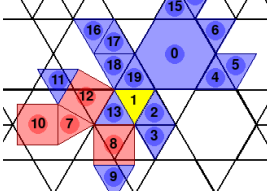
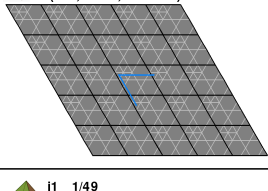
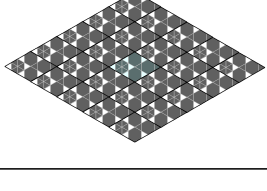
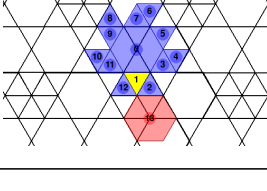
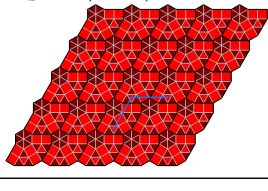
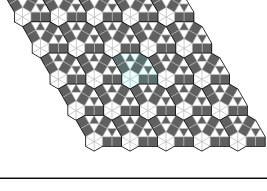
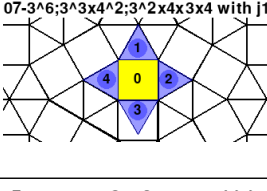
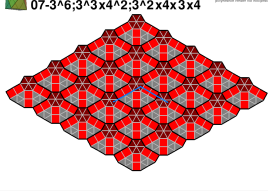
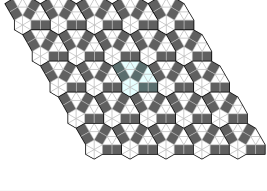
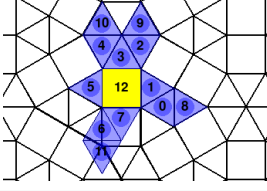
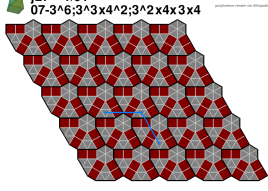
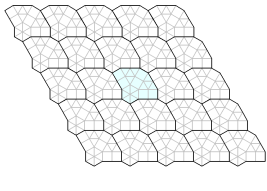
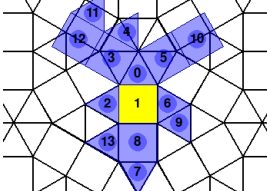
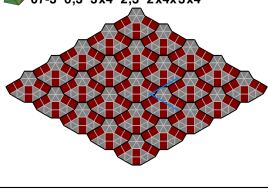
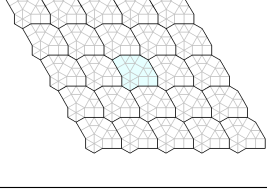
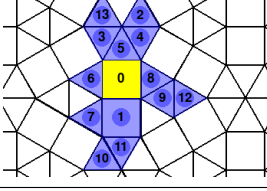
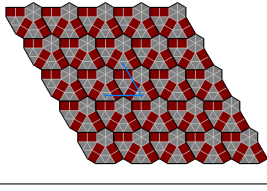
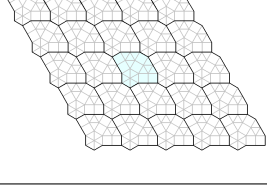
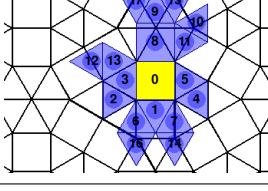
<p>hexagonal antiprism (3⁶; 3⁴x6)²</p>	<p>hexagonal antiprism 1/38 (3⁶; 3⁴x6)²</p> 		<p>(3⁶; 3⁴x6)² with hexagonal_antiprism</p> 
<p>j10 (3⁶; 3³x4²)¹</p>	<p>j10 1/3 (3⁶; 3³x4²)¹</p> 		<p>(3⁶; 3³x4²)¹ with j10</p> 
<p>j14 (3⁶; 3³x4²)¹</p>	<p>j14 1/19 (3⁶; 3³x4²)¹</p> 		<p>(3⁶; 3³x4²)¹ with j14</p> 
<p>j15 (3⁶; 3³x4²)¹</p>	<p>j15 1/25 (3⁶; 3³x4²)¹</p> 		<p>(3⁶; 3³x4²)¹ with j15</p> 
<p>j16 (3⁶; 3³x4²)¹</p>	<p>j16 1/31 (3⁶; 3³x4²)¹</p> 		<p>(3⁶; 3³x4²)¹ with j16</p> 
<p>j50 (3⁶; 3³x4²)¹</p>	<p>j50 1/3 (3⁶; 3³x4²)¹</p> 		<p>(3⁶; 3³x4²)¹ with j50</p> 

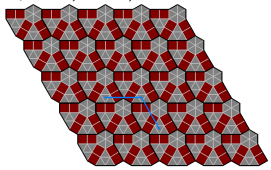
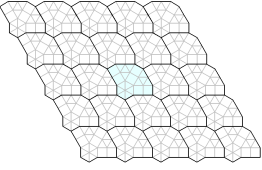
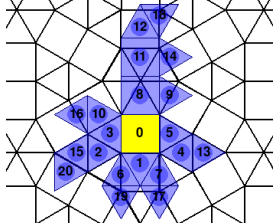
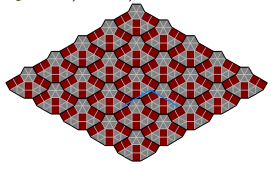
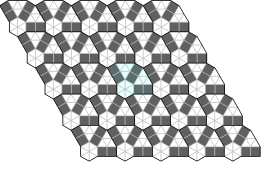
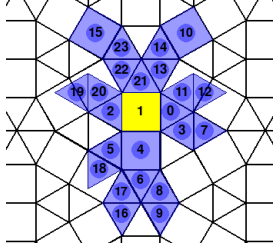
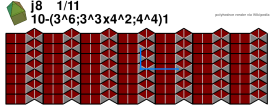
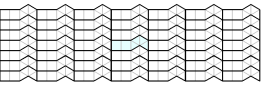
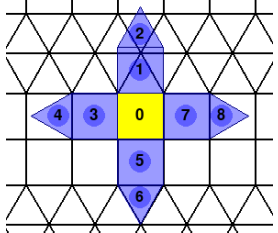
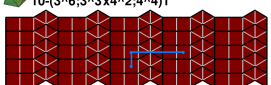
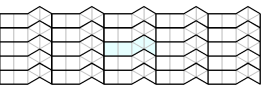
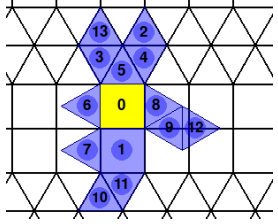
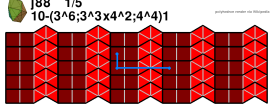
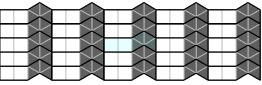
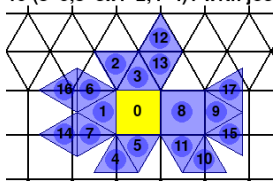
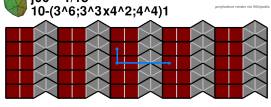
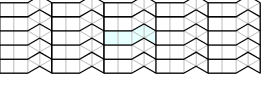
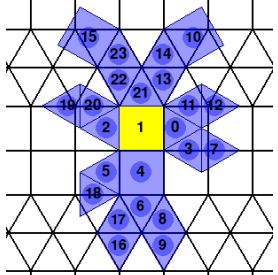
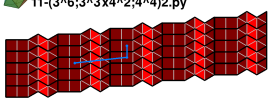
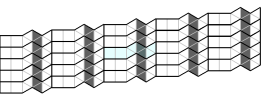
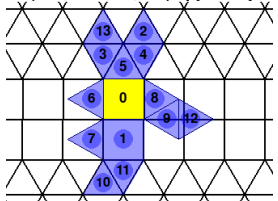
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<p>j89 $(3^6; 3^3x4^2)1$</p>	<p>j89 1/7 $(3^6; 3^3x4^2)1$</p> 		<p>$(3^6; 3^3x4^2)1$ with j89</p> 
<p>j90 $(3^6; 3^3x4^2)1$</p>	<p>j90 1/10 $(3^6; 3^3x4^2)1$</p> 		<p>$(3^6; 3^3x4^2)1$ with j90</p> 
<p>j10 $(3^6; 3^3x4^2)2$</p>	<p>j10 1/3 $(3^6; 3^3x4^2)2$</p> 		<p>$(3^6; 3^3x4^2)2$ with j10</p> 
<p>j50 $(3^6; 3^3x4^2)2$</p>	<p>j50 1/3 $(3^6; 3^3x4^2)2$</p> 		<p>$(3^6; 3^3x4^2)2$ with j50</p> 

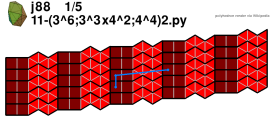
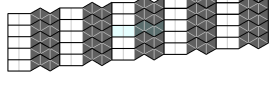
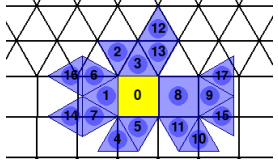
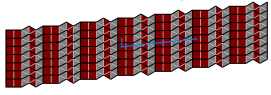
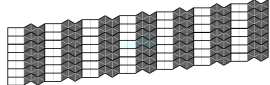
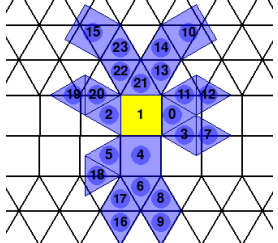
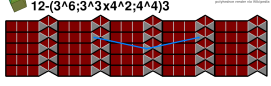
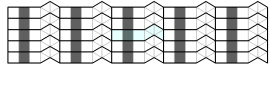
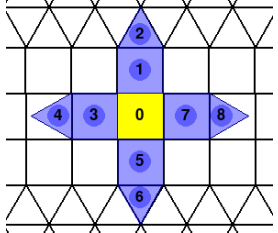
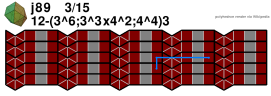
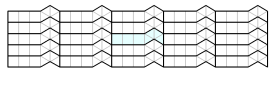
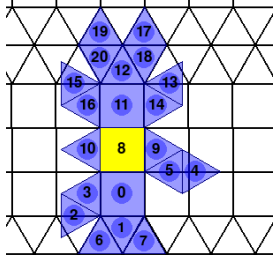
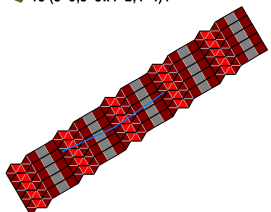
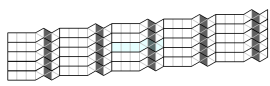
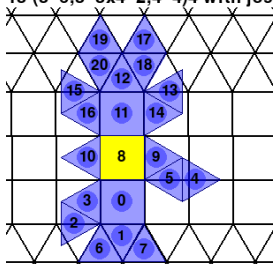
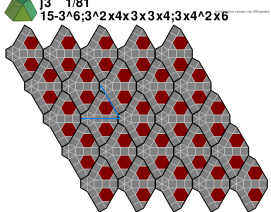
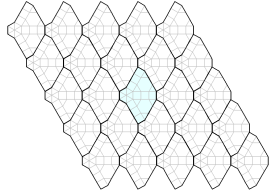
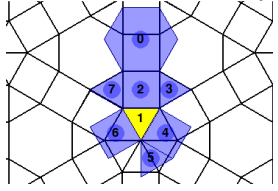
<p>j86 $(3^6; 3^3x4^2)_2$</p>	<p>j86 1/5 $(3^6; 3^3x4^2)_2$</p> 		<p>$(3^6; 3^3x4^2)_2$ with j86</p> 
<p>j89 $(3^6; 3^3x4^2)_2$</p>	<p>j89 1/7 $(3^6; 3^3x4^2)_2$</p> 		<p>$(3^6; 3^3x4^2)_2$ with j89</p> 
<p>j1 $3^6; 3^2x4x3x4$</p>	<p>j1 1/25 $3^6; 3^2x4x3x4$</p> 		<p>$3^6; 3^2x4x3x4$ with j1</p> 
<p>j10 $3^6; 3^2x4x3x4$</p>	<p>j10 1/76 $3^6; 3^2x4x3x4$</p> 		<p>$3^6; 3^2x4x3x4$ with j10</p> 
<p>j50 $3^6; 3^2x4x3x4$</p>	<p>j50 15/63 $3^6; 3^2x4x3x4$</p> 		<p>$3^6; 3^2x4x3x4$ with j50</p> 
<p>j85 $3^6; 3^2x4x3x4$</p>	<p>j85 1/148 $3^6; 3^2x4x3x4$</p> 		<p>$3^6; 3^2x4x3x4$ with j85</p> 

<p>j86 $3^6; 3^2x4x3x4$</p>	<p>j86 1/75 $3^6; 3^2x4x3x4$</p> 		<p>$3^6; 3^2x4x3x4$ with j86</p> 
<p>j87 $3^6; 3^2x4x3x4$</p>	<p>j87 1/101 $3^6; 3^2x4x3x4$</p> 		<p>$3^6; 3^2x4x3x4$ with j87</p> 
<p>j89 $3^6; 3^2x4x3x4$</p>	<p>j89 29/119 $3^6; 3^2x4x3x4$</p> 		<p>$3^6; 3^2x4x3x4$ with j89</p> 
<p>j90 $3^6; 3^2x4x3x4$</p>	<p>j90 1/122 $3^6; 3^2x4x3x4$</p> 		<p>$3^6; 3^2x4x3x4$ with j90</p> 
<p>truncated tetrahedron $3^6; 3^2x6^2$</p>	<p>truncated tetrahedron 2/27 $3^6; 3^2x6^2$</p> 		<p>$3^6; 3^2x6^2$ with truncated tetrahedron</p> 

<p>hexagonal antiprism $3^4x6; 3^2x6^2$</p>	<p>hexagonal antiprism 1/25 $3^4x6; 3^2x6^2$</p> 		<p>$3^4x6; 3^2x6^2$ with hexagonal antiprism</p> 
<p>j1 $(3^3x4^2; 3^2x4x3x4)1$</p>	<p>j1 1/36 $(3^3x4^2; 3^2x4x3x4)1$</p> 		<p>$(3^3x4^2; 3^2x4x3x4)1$ with j1</p> 
<p>j27 $(3^3x4^2; 3^2x4x3x4)1$</p>	<p>j27 1/50 $(3^3x4^2; 3^2x4x3x4)1$</p> 		<p>$(3^3x4^2; 3^2x4x3x4)1$ with j27</p> 
<p>j26 $(3^3x4^2; 3^2x4x3x4)2$</p>	<p>j26 1/18 $(3^3x4^2; 3^2x4x3x4)2$</p> 		<p>$(3^3x4^2; 3^2x4x3x4)2$ with j26</p> 
<p>hexagonal antiprism $02 - (3^6; 3^4x6; 3^2x6^2)2$</p>	<p>hexagonal antiprism 1/27 $02 - (3^6; 3^4x6; 3^2x6^2)2$</p> 		<p>$02 - (3^6; 3^4x6; 3^2x6^2)2$ with hexagonal antiprism</p> 
<p>hexagonal antiprism $04 - (3^6; 3^4x6; 3x6x3x6)1$</p>	<p>hexagonal antiprism 1/49 $04 - (3^6; 3^4x6; 3x6x3x6)1$</p> 		<p>$04 - (3^6; 3^4x6; 3x6x3x6)1$ with hexagonal antiprism</p> 
<p>j22 $05 - (3^6; 3^4x6; 3x6x3x6)2$</p>	<p>j22 1/182 $05 - (3^6; 3^4x6; 3x6x3x6)2$</p> 		<p>$05 - (3^6; 3^4x6; 3x6x3x6)2$ with j22</p> 

<p>hexagonal antiprism $05 - (3^6; 3^4x6; 3x6x3x6)2$</p>	<p>hexagonal antiprism 1/76 $05-(3^6;3^4x6;3x6x3x6)2$</p> 		<p>$05-(3^6;3^4x6;3x6x3x6)2$ with hexagonal_antiprism</p> 
<p>j22 $06 - (3^6; 3^4x6; 3x6x3x6)3$</p>	<p>j22 1/246 $06-(3^6;3^4x6;3x6x3x6)3$</p> 		<p>$06-(3^6;3^4x6;3x6x3x6)3$ with j22</p> 
<p>hexagonal antiprism $06 - (3^6; 3^4x6; 3x6x3x6)3$</p>	<p>hexagonal antiprism 1/84 $06-(3^6;3^4x6;3x6x3x6)3$</p> 		<p>$06-(3^6;3^4x6;3x6x3x6)3$ with hexagonal_antiprism</p> 
<p>j1 $07 - 3^6; 3^3x4^2; 3^2x4x3x4$</p>	<p>j1 1/49 $07-3^6;3^3x4^2;3^2x4x3x4$</p> 		<p>$07-3^6;3^3x4^2;3^2x4x3x4$ with j1</p> 
<p>j10 $07 - 3^6; 3^3x4^2; 3^2x4x3x4$</p>	<p>j10 1/99 $07-3^6;3^3x4^2;3^2x4x3x4$</p> 		<p>$07-3^6;3^3x4^2;3^2x4x3x4$ with j10</p> 
<p>j27 $07 - 3^6; 3^3x4^2; 3^2x4x3x4$</p>	<p>j27 1/91 $07-3^6;3^3x4^2;3^2x4x3x4$</p> 		<p>$07-3^6;3^3x4^2;3^2x4x3x4$ with j27</p> 
<p>j86 $07 - 3^6; 3^3x4^2; 3^2x4x3x4$</p>	<p>j86 1/98 $07-3^6;3^3x4^2;3^2x4x3x4$</p> 		<p>$07-3^6;3^3x4^2;3^2x4x3x4$ with j86</p> 
<p>j88 $07 - 3^6; 3^3x4^2; 3^2x4x3x4$</p>	<p>j88 28/115 $07-3^6;3^3x4^2;3^2x4x3x4$</p> 		<p>$07-3^6;3^3x4^2;3^2x4x3x4$ with j88</p> 

<p>j89</p> $07 - 3^6; 3^3x4^2; 3^2x4x3x4$	<p>j89 30/137 07-3^6;3^3x4^2;3^2x4x3x4</p> 		<p>07-3^6;3^3x4^2;3^2x4x3x4 with j89</p> 
<p>j90</p> $07 - 3^6; 3^3x4^2; 3^2x4x3x4$	<p>j90 1/170 07-3^6;3^3x4^2;3^2x4x3x4</p> 		<p>07-3^6;3^3x4^2;3^2x4x3x4 with j90</p> 
<p>j8</p> $10 - (3^6; 3^3x4^2; 4^4)1$	<p>j8 1/11 10-(3^6;3^3x4^2;4^4)1</p> 		<p>10-(3^6;3^3x4^2;4^4)1 with j8</p> 
<p>j86</p> $10 - (3^6; 3^3x4^2; 4^4)1$	<p>j86 1/9 10-(3^6;3^3x4^2;4^4)1</p> 		<p>10-(3^6;3^3x4^2;4^4)1 with j86</p> 
<p>j88</p> $10 - (3^6; 3^3x4^2; 4^4)1$	<p>j88 1/5 10-(3^6;3^3x4^2;4^4)1</p> 		<p>10-(3^6;3^3x4^2;4^4)1 with j88</p> 
<p>j90</p> $10 - (3^6; 3^3x4^2; 4^4)1$	<p>j90 1/18 10-(3^6;3^3x4^2;4^4)1</p> 		<p>10-(3^6;3^3x4^2;4^4)1 with j90</p> 
<p>j86</p> $11 - (3^6; 3^3x4^2; 4^4)2.py$	<p>j86 1/9 11-(3^6;3^3x4^2;4^4)2.py</p> 		<p>11-(3^6;3^3x4^2;4^4)2.py with j86</p> 

<p>j88</p> $11 - (3^6; 3^3x4^2; 4^4)2.py$	 <p>j88 1/5 11-(3^6;3^3x4^2;4^4)2.py</p>		<p>11-(3^6;3^3x4^2;4^4)2.py with j88</p> 
<p>j90</p> $11 - (3^6; 3^3x4^2; 4^4)2.py$	 <p>j90 1/9 11-(3^6;3^3x4^2;4^4)2.py</p>		<p>11-(3^6;3^3x4^2;4^4)2.py with j90</p> 
<p>j8</p> $12 - (3^6; 3^3x4^2; 4^4)3$	 <p>j8 1/11 12-(3^6;3^3x4^2;4^4)3</p>		<p>12-(3^6;3^3x4^2;4^4)3 with j8</p> 
<p>j89</p> $12 - (3^6; 3^3x4^2; 4^4)3$	 <p>j89 3/15 12-(3^6;3^3x4^2;4^4)3</p>		<p>12-(3^6;3^3x4^2;4^4)3 with j89</p> 
<p>j89</p> $13 - (3^6; 3^3x4^2; 4^4)4$	 <p>j89 3/15 13-(3^6;3^3x4^2;4^4)4</p>		<p>13-(3^6;3^3x4^2;4^4)4 with j89</p> 
<p>j3</p> $15 - 3^6; 3^2x4x3x3x4; 3x4^2x6$	 <p>j3 1/81 15-3^6;3^2x4x3x3x4;3x4^2x6</p>		<p>15-3^6;3^2x4x3x3x4;3x4^2x6 with j3</p> 

2.3 Highlights

J1 is an interesting shape that has many tilings it rolls. It is stable on squares (because there is only one square face).

3 Upcoming

- Rollers that cover the whole plane but with holes: quasi-plane rollers and hollow plane rollers
- Rollers that covers a band of the plane: band rollers
- Rollers that get stuck in an area: bounded rollers