Freyara

Fictional meadow ring

Geometry kaleidocycle-6-tetra, revision 2026-09-14.1. Size: Compact - 6 beads per face edge. Exported 2026-11-09 by Freyara 0.1.0.

Status of this pattern

Geometry validation status: candidate-unverified. Physical samples built: 0. Expert review: none.

DRAFT, NOT VALIDATED. No physical sample has been stitched from these instructions and no experienced beader has reviewed them. Bead counts and seam mappings are arithmetic taken from the editor model. Treat the first ring you make as the test of this document, not the other way round.

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The piece at a glance

Item	Count
Tetrahedra in the ring	6
Triangular faces	24
Beads per face edge	6
Beads per face	21
Zipped seams inside tetrahedra	36
Hinges between tetrahedra	6
Face beads if fully coloured	504
Face beads coloured so far	7
Face beads still uncoloured	497
Connector beads (hinges)	38
Total beads at full colouring	542

Bill of materials

Face beads and connector beads are listed separately because they are different bead sizes. Faces: cylinder beads 11/0. Hinges: seed beads 15/0 in a contrasting or matching colour.

497 face beads have no colour yet, so these totals describe the pattern as it stands, not a finished piece.

Code	Colour	Hex	Face beads	Connector beads	Total
A	Cream	#f2e8d5	1	8	9
B	Rust	#b2482b	3	0	3
C	Indigo	#2f3e7a	3	24	27
	Totals		**7**	**38**	**45**

Hinge connector beads

These are not body beads. They are the smaller bead used for the ladder that links two finished tetrahedra, and they are excluded from every body-bead total above.

Item	Count
Hinges in the ring	6
Default connectors per hinge	6
Connector beads in this project	38
Of those, colour not chosen	6

6 connector beads have no colour assigned and are counted in the hinge total only.

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Seams inside the tetrahedra

Zip each seam so the beads of one edge fall into the gaps of the other. The two edges meet head to tail: the first bead of one edge sits against the last bead of the other.

Every edge is read counter-clockwise, in the direction of the chevron printed just inside it on the chart, running from the first corner label to the second. The Direction column below spells out which bead meets which.

Seam	Tetra	Edge	Corners	Pattern face A / edge	Pattern face B / edge	Direction
Z01	T1	AB	P6-Q6	face 1 / left	face 2 / base	A bead 1..6 meets B bead 6..1
Z02	T1	AC	P6-P1	face 1 / base	face 3 / left	A bead 1..6 meets B bead 6..1
Z03	T1	AD	P6-Q1	face 2 / left	face 3 / base	A bead 1..6 meets B bead 6..1
Z04	T1	BC	Q6-P1	face 1 / right	face 4 / base	A bead 1..6 meets B bead 6..1
Z05	T1	BD	Q6-Q1	face 2 / right	face 4 / left	A bead 1..6 meets B bead 6..1
Z06	T1	CD	P1-Q1	face 3 / right	face 4 / right	A bead 1..6 meets B bead 6..1
Z07	T2	AB	P1-Q1	face 5 / left	face 6 / base	A bead 1..6 meets B bead 6..1
Z08	T2	AC	P1-P2	face 5 / base	face 7 / left	A bead 1..6 meets B bead 6..1
Z09	T2	AD	P1-Q2	face 6 / left	face 7 / base	A bead 1..6 meets B bead 6..1
Z10	T2	BC	Q1-P2	face 5 / right	face 8 / base	A bead 1..6 meets B bead 6..1
Z11	T2	BD	Q1-Q2	face 6 / right	face 8 / left	A bead 1..6 meets B bead 6..1
Z12	T2	CD	P2-Q2	face 7 / right	face 8 / right	A bead 1..6 meets B bead 6..1
Z13	T3	AB	P2-Q2	face 9 / left	face 10 / base	A bead 1..6 meets B bead 6..1
Z14	T3	AC	P2-P3	face 9 / base	face 11 / left	A bead 1..6 meets B bead 6..1
Z15	T3	AD	P2-Q3	face 10 / left	face 11 / base	A bead 1..6 meets B bead 6..1
Z16	T3	BC	Q2-P3	face 9 / right	face 12 / base	A bead 1..6 meets B bead 6..1
Z17	T3	BD	Q2-Q3	face 10 / right	face 12 / left	A bead 1..6 meets B bead 6..1
Z18	T3	CD	P3-Q3	face 11 / right	face 12 / right	A bead 1..6 meets B bead 6..1
Z19	T4	AB	P3-Q3	face 13 / left	face 14 / base	A bead 1..6 meets B bead 6..1
Z20	T4	AC	P3-P4	face 13 / base	face 15 / left	A bead 1..6 meets B bead 6..1
Z21	T4	AD	P3-Q4	face 14 / left	face 15 / base	A bead 1..6 meets B bead 6..1
Z22	T4	BC	Q3-P4	face 13 / right	face 16 / base	A bead 1..6 meets B bead 6..1
Z23	T4	BD	Q3-Q4	face 14 / right	face 16 / left	A bead 1..6 meets B bead 6..1
Z24	T4	CD	P4-Q4	face 15 / right	face 16 / right	A bead 1..6 meets B bead 6..1

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Seam	Tetra	Edge	Corners	Pattern face A / edge	Pattern face B / edge	Direction
Z25	T5	AB	P4-Q4	face 17 / left	face 18 / base	A bead 1..6 meets B bead 6..1
Z26	T5	AC	P4-P5	face 17 / base	face 19 / left	A bead 1..6 meets B bead 6..1
Z27	T5	AD	P4-Q5	face 18 / left	face 19 / base	A bead 1..6 meets B bead 6..1
Z28	T5	BC	Q4-P5	face 17 / right	face 20 / base	A bead 1..6 meets B bead 6..1
Z29	T5	BD	Q4-Q5	face 18 / right	face 20 / left	A bead 1..6 meets B bead 6..1
Z30	T5	CD	P5-Q5	face 19 / right	face 20 / right	A bead 1..6 meets B bead 6..1
Z31	T6	AB	P5-Q5	face 21 / left	face 22 / base	A bead 1..6 meets B bead 6..1
Z32	T6	AC	P5-P6	face 21 / base	face 23 / left	A bead 1..6 meets B bead 6..1
Z33	T6	AD	P5-Q6	face 22 / left	face 23 / base	A bead 1..6 meets B bead 6..1
Z34	T6	BC	Q5-P6	face 21 / right	face 24 / base	A bead 1..6 meets B bead 6..1
Z35	T6	BD	Q5-Q6	face 22 / right	face 24 / left	A bead 1..6 meets B bead 6..1
Z36	T6	CD	P6-Q6	face 23 / right	face 24 / right	A bead 1..6 meets B bead 6..1

Hinges between the tetrahedra

Each hinge is a ladder of separate connector beads linking two finished tetrahedra along an existing seam. Work H6 last: it closes the ring.

Hinge	From seam	To seam	Tetrahedra	Corners	Connector beads	Colour
H1	Z06	Z07	1 -> 2	P1-Q1	6	C Indigo
H2	Z12	Z13	2 -> 3	P2-Q2	6	C Indigo
H3	Z18	Z19	3 -> 4	P3-Q3	6	C Indigo
H4	Z24	Z25	4 -> 5	P4-Q4	8	A Cream
H5	Z30	Z31	5 -> 6	P5-Q5	6	C Indigo
H6	Z36	Z01	6 -> 1	P6-Q6	6	not chosen

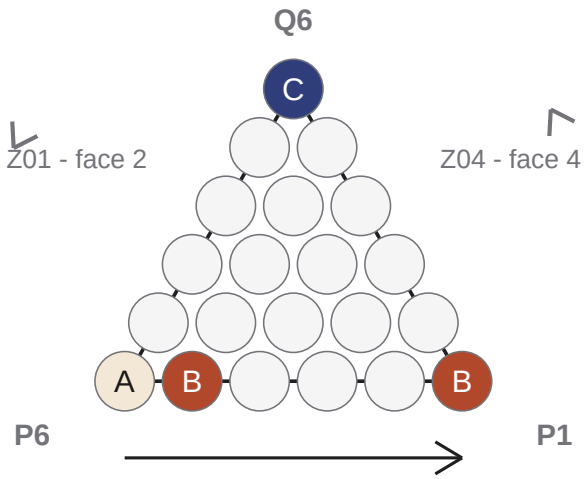
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Tetrahedron T1 - faces 1 to 4

Row 1 is the widest row, at the bottom of each chart, and the arrow shows the direction to read it. Corner labels name the tetrahedron corners; edge labels name the seam and the face on the far side.

Face 1

T1 - ACB - 6 beads per edge

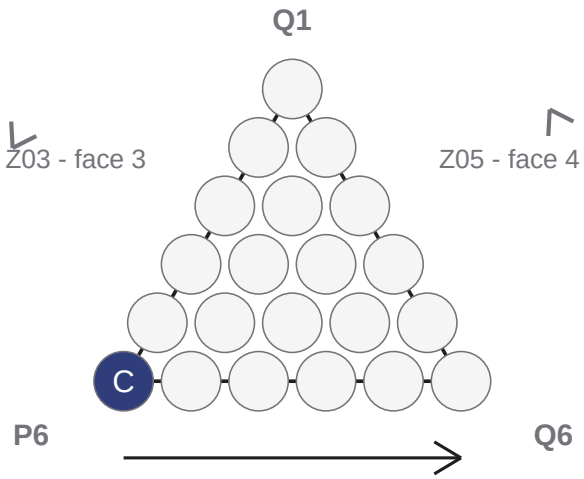


row 1 - start here

Z02 - face 3

Face 2

T1 - ABD - 6 beads per edge

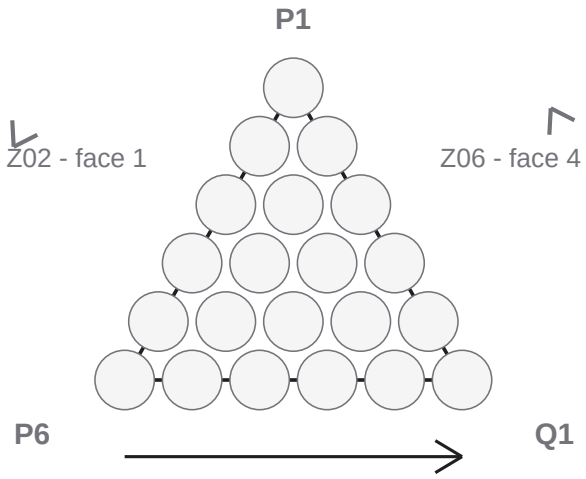


row 1 - start here

Z01 - face 1

Face 3

T1 - ADC - 6 beads per edge

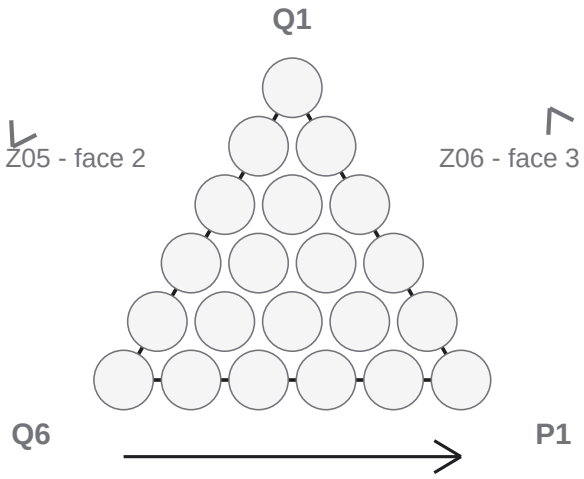


row 1 - start here

Z03 - face 2

Face 4

T1 - BCD - 6 beads per edge



row 1 - start here

Z04 - face 1

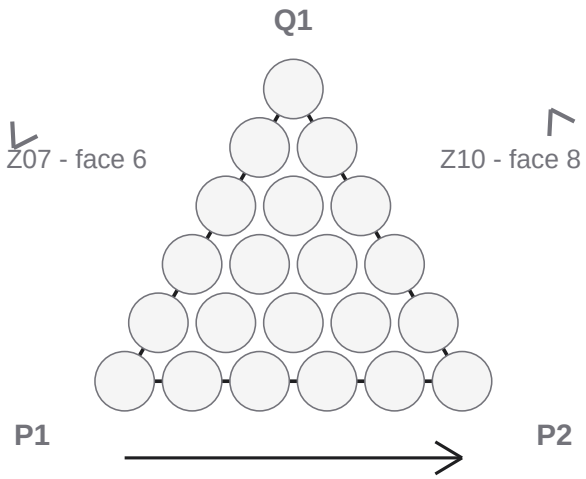
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Tetrahedron T2 - faces 5 to 8

Row 1 is the widest row, at the bottom of each chart, and the arrow shows the direction to read it. Corner labels name the tetrahedron corners; edge labels name the seam and the face on the far side.

Face 5

T2 - ACB - 6 beads per edge

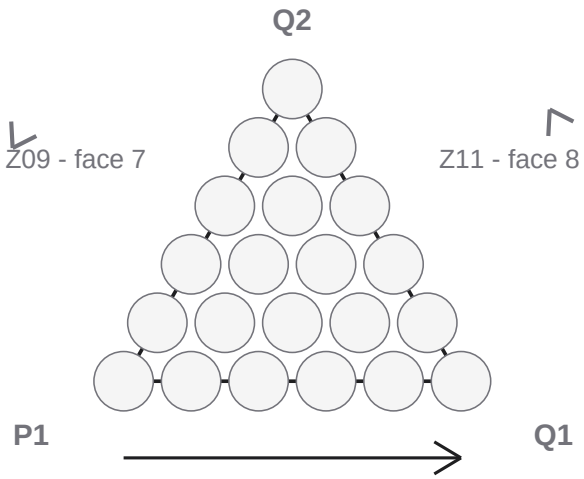


row 1 - start here

Z08 - face 7

Face 6

T2 - ABD - 6 beads per edge

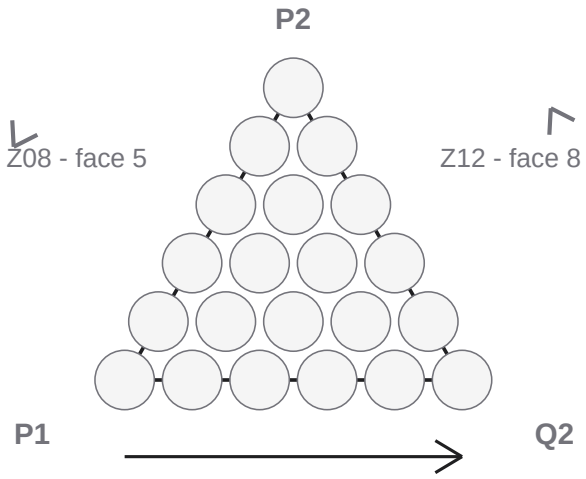


row 1 - start here

Z07 - face 5

Face 7

T2 - ADC - 6 beads per edge

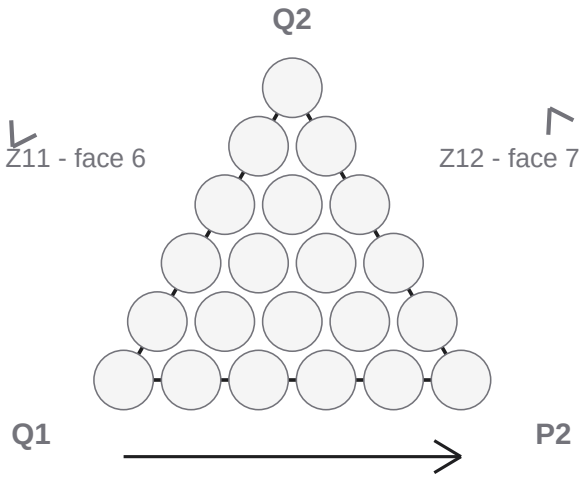


row 1 - start here

Z09 - face 6

Face 8

T2 - BCD - 6 beads per edge



row 1 - start here

Z10 - face 5

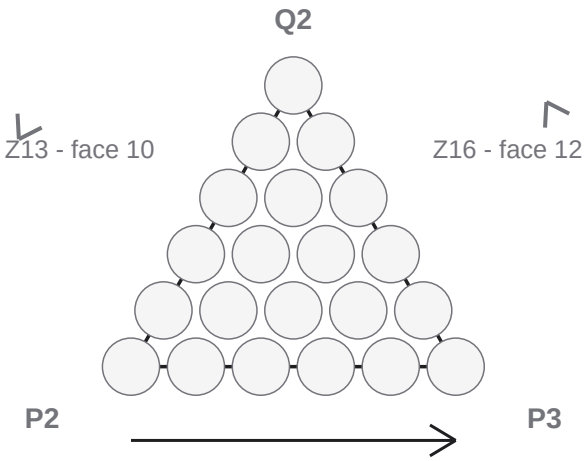
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Tetrahedron T3 - faces 9 to 12

Row 1 is the widest row, at the bottom of each chart, and the arrow shows the direction to read it. Corner labels name the tetrahedron corners; edge labels name the seam and the face on the far side.

Face 9

T3 - ACB - 6 beads per edge

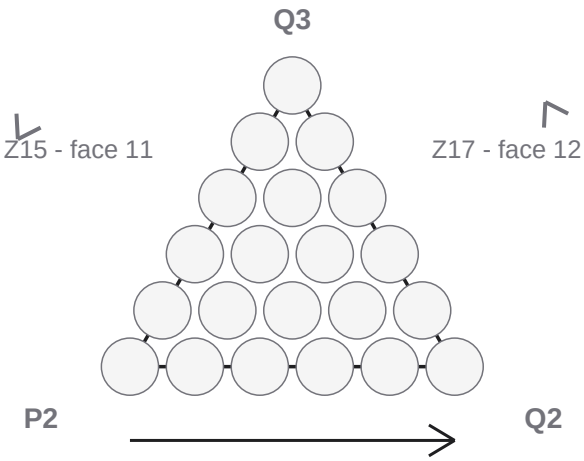


row 1 - start here

Z14 - face 11

Face 10

T3 - ABD - 6 beads per edge

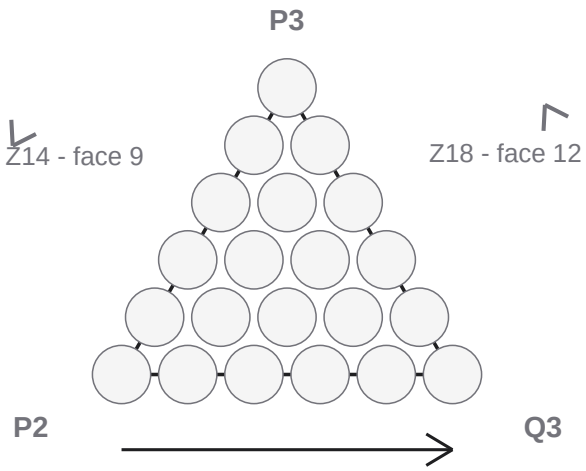


row 1 - start here

Z13 - face 9

Face 11

T3 - ADC - 6 beads per edge

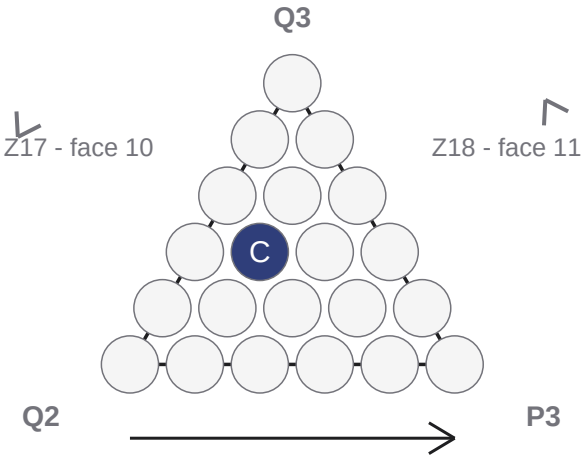


row 1 - start here

Z15 - face 10

Face 12

T3 - BCD - 6 beads per edge



row 1 - start here

Z16 - face 9

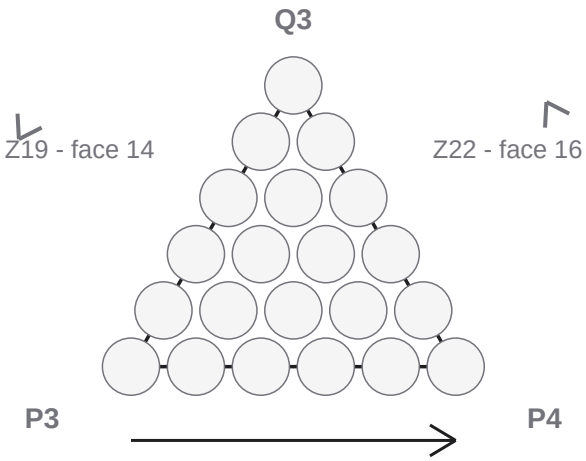
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Tetrahedron T4 - faces 13 to 16

Row 1 is the widest row, at the bottom of each chart, and the arrow shows the direction to read it. Corner labels name the tetrahedron corners; edge labels name the seam and the face on the far side.

Face 13

T4 - ACB - 6 beads per edge

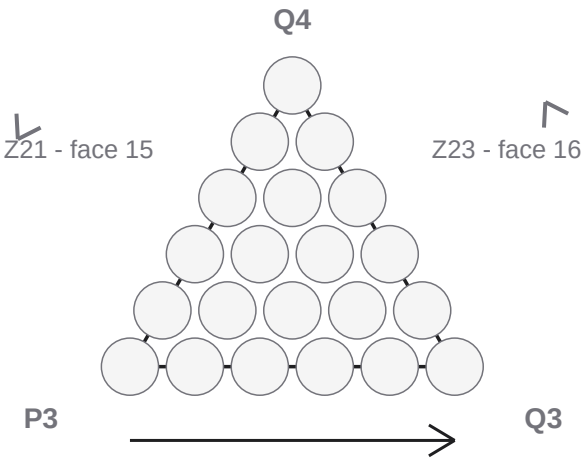


row 1 - start here

Z20 - face 15

Face 14

T4 - ABD - 6 beads per edge

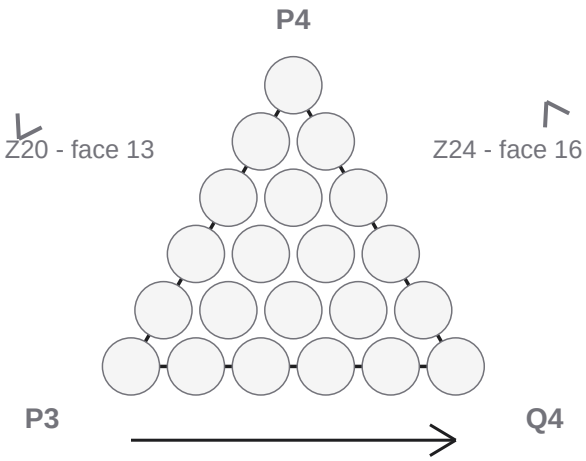


row 1 - start here

Z19 - face 13

Face 15

T4 - ADC - 6 beads per edge

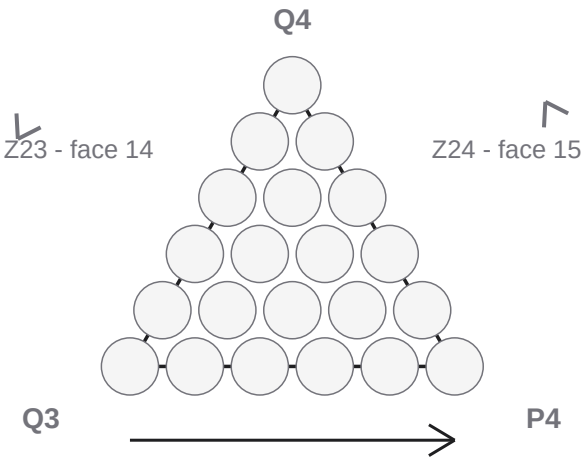


row 1 - start here

Z21 - face 14

Face 16

T4 - BCD - 6 beads per edge



row 1 - start here

Z22 - face 13

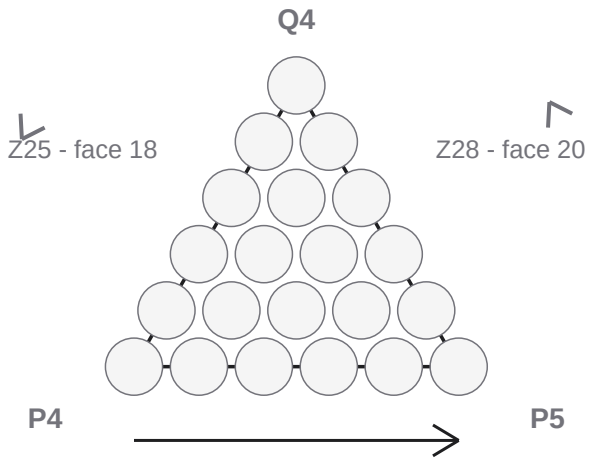
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Tetrahedron T5 - faces 17 to 20

Row 1 is the widest row, at the bottom of each chart, and the arrow shows the direction to read it. Corner labels name the tetrahedron corners; edge labels name the seam and the face on the far side.

Face 17

T5 - ACB - 6 beads per edge

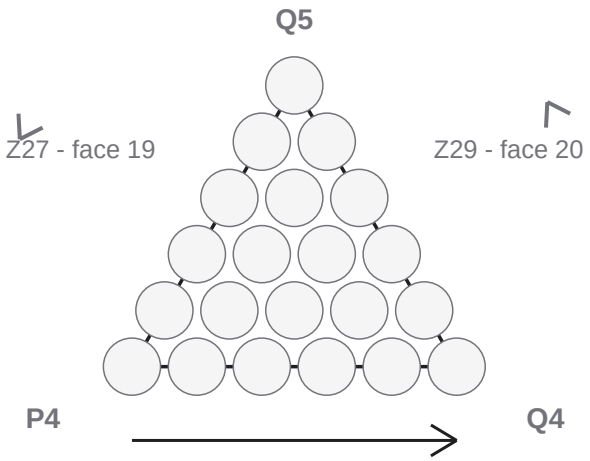


row 1 - start here

Z26 - face 19

Face 18

T5 - ABD - 6 beads per edge

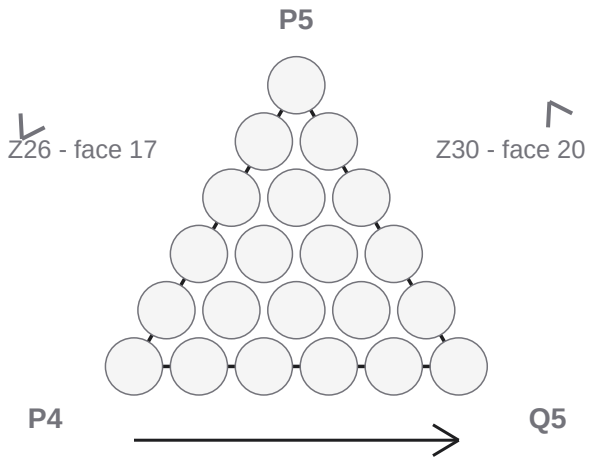


row 1 - start here

Z25 - face 17

Face 19

T5 - ADC - 6 beads per edge

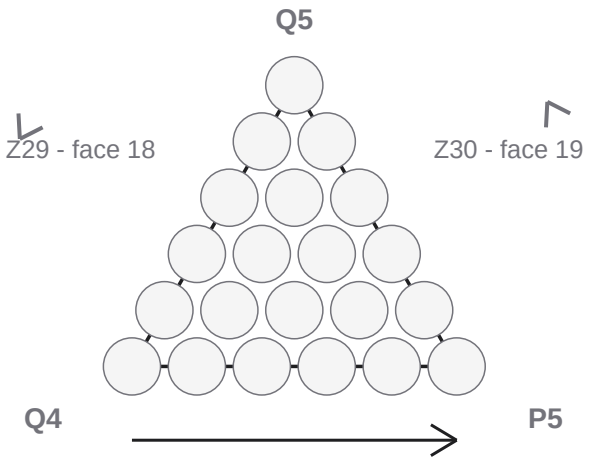


row 1 - start here

Z27 - face 18

Face 20

T5 - BCD - 6 beads per edge



row 1 - start here

Z28 - face 17

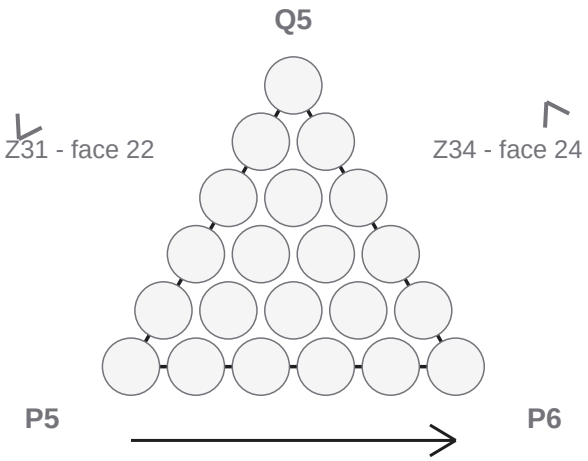
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Tetrahedron T6 - faces 21 to 24

Row 1 is the widest row, at the bottom of each chart, and the arrow shows the direction to read it. Corner labels name the tetrahedron corners; edge labels name the seam and the face on the far side.

Face 21

T6 - ACB - 6 beads per edge

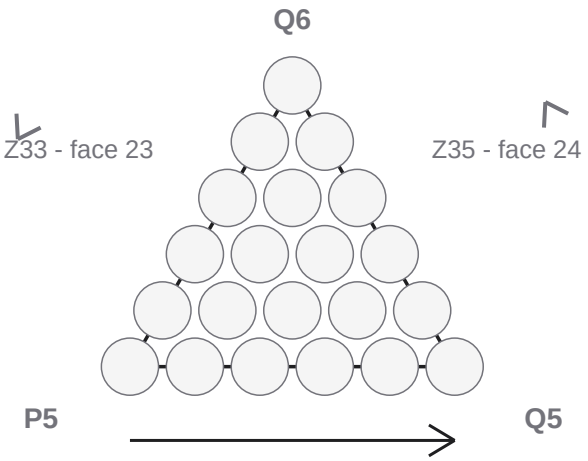


row 1 - start here

Z32 - face 23

Face 22

T6 - ABD - 6 beads per edge

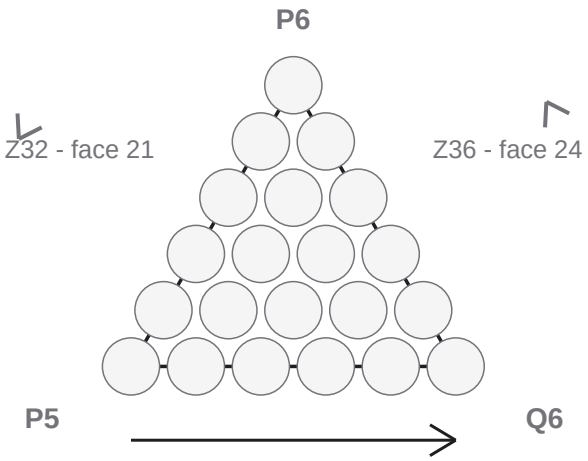


row 1 - start here

Z31 - face 21

Face 23

T6 - ADC - 6 beads per edge

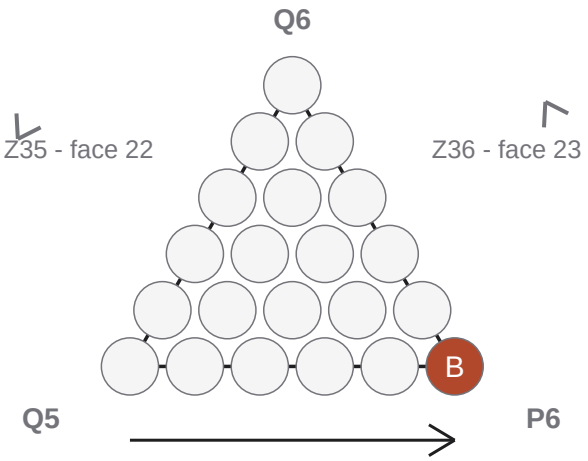


row 1 - start here

Z33 - face 22

Face 24

T6 - BCD - 6 beads per edge



row 1 - start here

Z34 - face 21

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Colour legend

The letter printed inside each bead identifies its colour. This is what makes the charts usable on a black-and-white printer.

- A Cream (#f2e8d5) face 1, hinge 8
- B Rust (#b2482b) face 3, hinge 0
- C Indigo (#2f3e7a) face 3, hinge 24

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Freyara ring of six tetrahedra - assembly draft

DRAFT, NOT VALIDATED. No physical sample has been stitched from these instructions and no experienced beader has reviewed them. Bead counts and seam mappings are arithmetic taken from the editor model. Treat the first ring you make as the test of this document, not the other way round.

What you are making

Six beaded tetrahedra joined into a closed ring. Each tetrahedron is four triangular peyote faces zipped together along its six edges. Consecutive tetrahedra are linked along a pair of opposite edges with a ladder of separate connector beads, which is the hinge the ring turns on.

The ring has 24 faces, 36 zipped seams inside the tetrahedra and 6 hinges between them. The editor numbers the faces 1 to 24, the seams Z01 to Z36 and the hinges H1 to H6. Those numbers appear on every chart and in the join table, and they are the only reliable way to keep track of which edge meets which.

Materials

Faces: cylinder beads (11/0) in the colours listed in your bill of materials. Cylinder beads are strongly preferred over rounds here, because the faces must stay flat and the same size or the seams will not line up.

Hinges: smaller seed beads (15/0). Buy these separately; they are counted separately in the bill of materials for that reason.

Thread and needle to your own preference. A beading mat and a small pair of scissors. A fine crochet hook or a bead awl is useful for undoing a wrong stitch without cutting.

Reading a face chart

Each chart shows one triangle. Row 1 is the widest row, at the bottom, and the arrow under it points in the direction you read the row: left to right. Every row above holds one bead fewer, and each bead sits in the valley between two beads of the row below. The top row is a single bead, the apex.

The three corners carry labels such as P3 or Q4. Those are the corners of the tetrahedron, not decoration: two faces that share a corner label meet at that corner in the finished piece. The label along each edge, for example "Z14 - face 11", names the seam and the face on the other side of it.

The letter inside each bead is the colour code from the legend. The codes are there so the chart still works when printed in black and white, or when your printer shifts the colours.

Stitching one face

Triangular peyote worked in rows, decreasing naturally at both ends. There is no separate decrease stitch: the row simply ends one bead short because there is one valley fewer to fill.

1. String the beads of row 1 from left to right, following the chart. Leave a tail of about 15 cm.
2. Turn. Pick up the first bead of row 2, skip one bead of row 1 and pass through the next. Continue across, one bead per valley. Row 2 ends one bead short of row 1 at each end; that is correct.
3. Turn and work row 3 the same way into the valleys of row 2, and so on.
4. Continue until a single bead closes the apex. Do not cut the thread; weave it back two or three rows and leave it. You will use it for the seams.
5. Make all four faces of one tetrahedron before you join anything.

Closing one tetrahedron

The four faces of a tetrahedron are joined edge to edge in six seams. The join table lists them by tetrahedron, for example "Z01, T1, AB, face 1 edge left to face 2 edge base". Work through the table in order and you cannot lose your place.

Each seam is a peyote zip: hold the two edges together so the beads of one edge fall into the gaps of the other, and stitch through them alternately. The two edges have the same number of beads and meet head to tail, so the first bead of one edge sits against the last bead of the other.

1. Zip the first three seams so the four triangles form an open shell.
2. Check the colours as you go. If the chart is coloured so the seam should be continuous and it is not, you have a face the wrong way round; unzip now rather than later.
3. Zip the remaining seams. The last one closes the tetrahedron and has to be worked partly by feel.
4. Weave the threads in. Leave the two threads nearest the hinge edges long; they are convenient for the hinges.

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5. Repeat for all six tetrahedra.

Hinges

A hinge links the CD seam of one tetrahedron to the AB seam of the next. The editor calls them H1 to H6 and lists the connector bead count for each. The default count is one connector per bead position along the seam, which for the compact size is 6 and for the large size is 10.

A hinge is worked as a ladder. Each rung takes one connector bead, passes through a bead on the seam of the first tetrahedron, back through the connector, and through the matching bead on the seam of the second. Keep the tension loose enough that the two tetrahedra can swing freely: the hinge is the moving part, and a tight hinge is the usual reason a ring will not turn.

1. Lay the two tetrahedra side by side with the seams to be hinged facing each other, matching the corner labels printed on the charts.
2. Work the rungs from one end of the seam to the other, one connector bead per rung.
3. Test the swing before moving on. It should fold flat both ways with no resistance.
4. Join H1 through H5 in order, leaving H6 for last.
5. H6 closes the ring. Check the direction of the last tetrahedron against the corner labels before stitching, because a ring closed with one tetrahedron reversed will not turn.

If it does not turn

Most commonly the hinges are too tight; add a row of thread passes and loosen. If a single hinge binds while the others move, that hinge has too few connector beads for the bead size you used; raise the count for that hinge in the editor and record the number that worked.

If the ring is rigid everywhere, the tetrahedra are probably too close to regular. A ring of six tetrahedra needs the hinge edges to be genuinely opposite and the faces to be elongated rather than equilateral in the finished solid. Beadwork gets this through bead count and tension rather than through the chart, which is one of the assumptions listed below.

Assumptions that have not been checked

- No sample has been stitched from this model. Every bead count and seam mapping is arithmetic, and the faces are drawn as equilateral triangles.
- A ring of six tetrahedra is assumed to evert. Whether this particular ring does depends on the proportions the beadwork ends up with, which the combinatorial model does not fix.
- The hinge identification used here, corner C of one tetrahedron to corner A of the next, is one of two consistent ways round the ring. The other produces a mirrored ring. The two have not been compared on a physical sample.
- The default connector count of one bead per seam position is a starting guess, not a measured value.
- The 2D neighbour view is a flat unfolding of the declared topology. It is not a simulation and it cannot tell you whether the object closes.
- The triangle peyote convention used here (rows that narrow by one bead as each row nests into the valleys of the row below) is documented in docs/peyote-convention.md and has not been checked against a stitched sample.

What would make this a validated pattern

- Two rings stitched, one in each size, by a beader experienced with three-dimensional peyote.
- Bead and connector counts reconciled against what was actually used.
- The finished rings checked for free rotation through a full cycle.
- The charts and this document read by a beader who has not used the editor, without spoken explanation.

CANDIDATE GEOMETRY (candidate-unverified) - 0 physical samples built, expert review: none. Not a validated pattern.
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