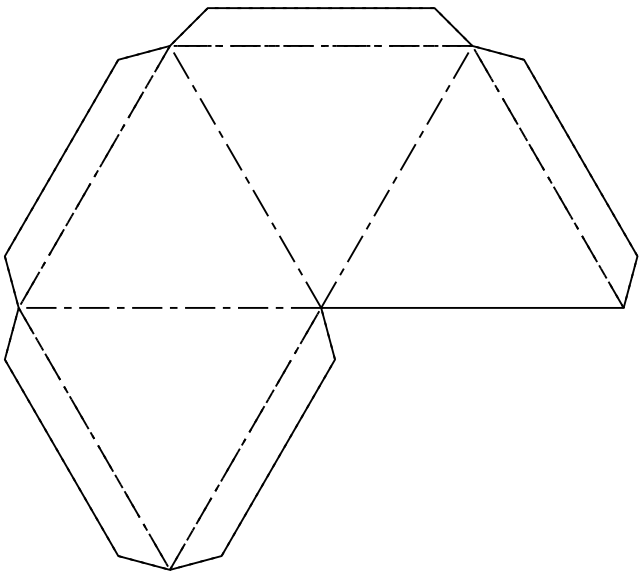
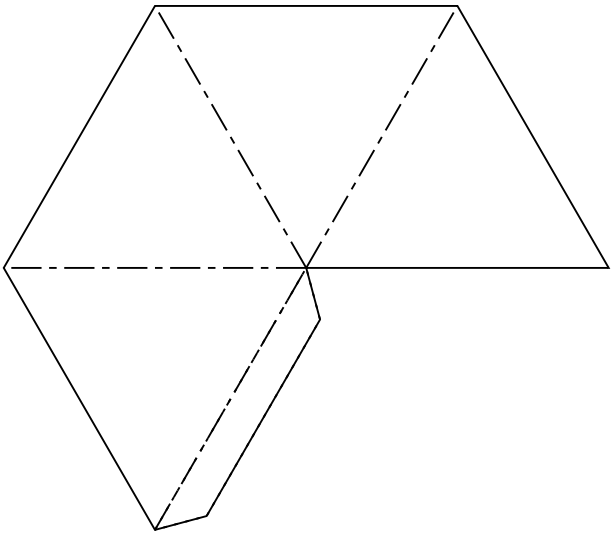
Regular Octahedron

octahedron / 1.0.0 / A4 / Template page 1

U | cut 1
83.66 x 74.28 mm



L | cut 1
80.00 x 69.28 mm



Solid: cut | Dashed: valley | Dash-dot: mountain | Dotted: glue

50 mm calibration

Print at 100% / Actual size. Do not fit to page. Original paper craft template.

Regular Octahedron

octahedron / 1.0.0 / A4 / Assembly instructions

Finished size: 56.569 x 56.569 x 56.569 mm; all shell edges 40 mm

Materials: 160-180 gsm paper; Scissors; Blunt scoring tool; Ruler; PVA glue; Tweezers

Original construction. Physical printing, cutting and assembly pending.

All eight faces are equilateral triangles: 40 mm edges, 60 degree corners. Interior dihedral 109.471221 degrees; turn from flat 70.528779 degrees at every hinge and tab root.

Printed side is the outside. Mountain-fold all marked lines away from the printed side. Tabs tuck beneath receiving faces; apply glue to the printed face of each tab.

Zero-thickness exact geometry: paper thickness, glue thickness and springback are not simulated. No stretching, hidden pieces or extra cuts.

Seam map: place each fan with its four-triangle meeting point O and initial radius pointing right. Number faces U1-U4 or L1-L4 counterclockwise from that radius. The final radius points down-left.

U-R / L-R: tab on final radius joins initial radius of the SAME fan. E1-E4: upper perimeter edges in counterclockwise order mate to lower perimeter edges in REVERSE order: U1-L4, U2-L3, U3-L2, U4-L1.

Companion assembly-guide.svg shows face and seam labels; reference only, use the calibrated PDFs for cutting. All tabs are 5 mm deep with 5 mm corner setbacks.

Part inventory (cut each instance once):

U: U: four-face fan with integral seam tabs

L: L: four-face fan with integral seam tabs

1. Print, identify and cut [U, L]: Print at 100 percent; verify the 50 mm ruler and a 40 mm face edge. Transfer face and seam labels from the seam map to the inside in pencil. Cut one U and one L around solid outlines, retaining every tab.

2. Score and pre-fold [U, L]: Score the three internal radial hinges per fan and all six tab roots. Mountain-fold from the printed outside by 70.529 degrees from flat (109.471 degrees inside). Keep triangular panels flat; do not cut internal radial lines.

3. Close upper half [U]: Bring the initial and final radii together, forming a square opening. Glue U-R under U1 along its initial radius, aligning the full 40 mm edges and apex. Press from the still-open square base and let set. Leave E1-E4 tabs free.

4. Close lower half [L]: Repeat with L-R under L1. Press the seam through the open base and let dry. The two open square rims must match, each side 40 mm.

5. Dry fit equator [U, L]: Place the square rims together with apices pointing opposite ways. Align E1 on U1 to L4, E2 on U2 to L3, E3 on U3 to L2, and E4 on U4 to L1. Upper tabs must tuck inside the lower faces. Dry fit all four before gluing.

6. Join first three edges [U, L]: Apply a thin film to E1, mate and hold. Then glue E2 and E3 one at a time, using the remaining E4 opening for tweezers access. Align edge endpoints exactly; let these three seams set before closing E4.

7. Close final seam [U, L]: Apply a little glue to E4 through the remaining opening, tuck it under L1 and press the receiving face gently onto the tab. Hold until tacky without crushing the hollow shell. Let dry fully; check eight flat faces and twelve matched 40 mm edges.