Open-Sector Observatory

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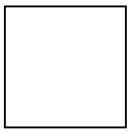
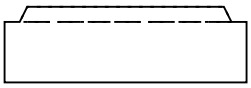
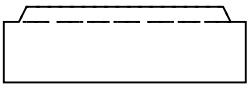
PT | cut 1
16.00 x 16.00 mm



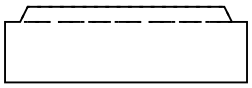
T1 | cut 1
32.00 x 10.00 mm



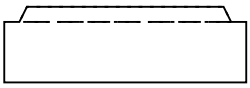
T2 | cut 1
32.00 x 10.00 mm



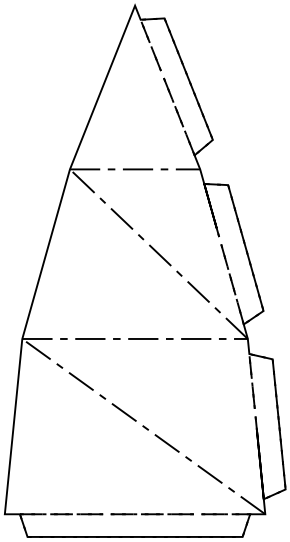
T3 | cut 1
32.00 x 10.00 mm



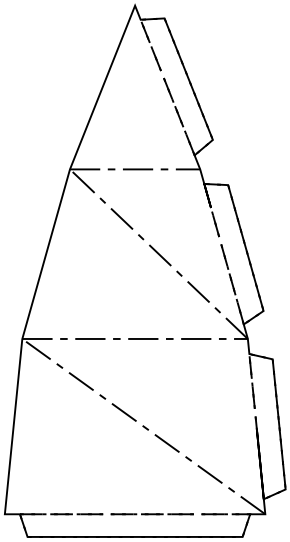
T4 | cut 1
32.00 x 10.00 mm



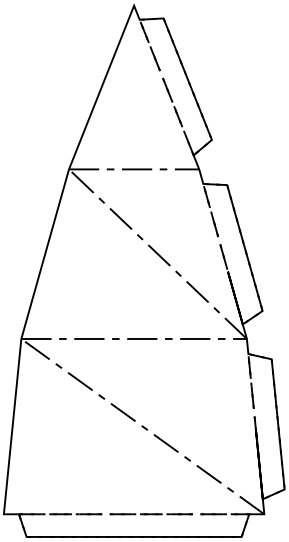
G2 | cut 1
37.13 x 70.25 mm



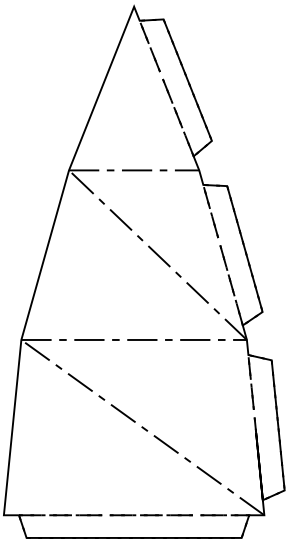
G3 | cut 1
37.13 x 70.25 mm



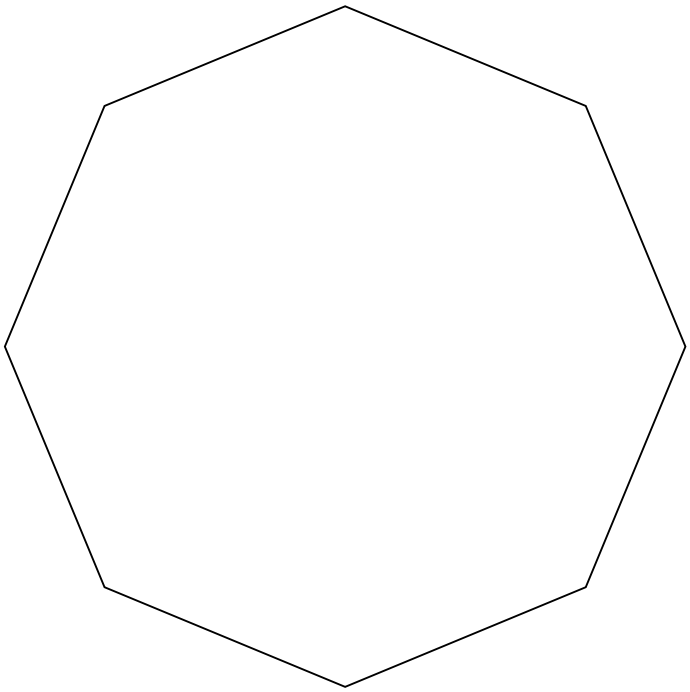
G5 | cut 1
37.13 x 70.25 mm



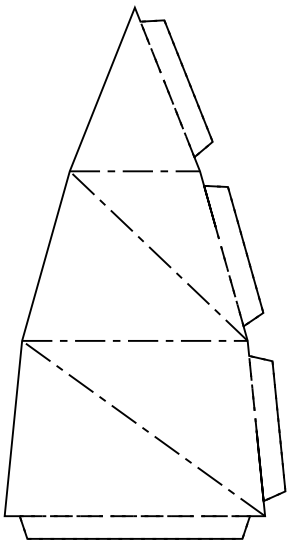
G6 | cut 1
37.13 x 70.25 mm



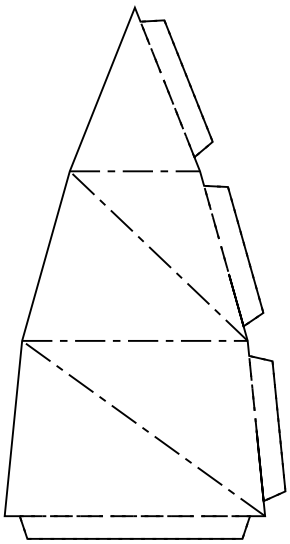
F | cut 1
90.00 x 90.00 mm



G4 | cut 1
37.13 x 70.25 mm



G1 | cut 1
37.13 x 70.25 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.

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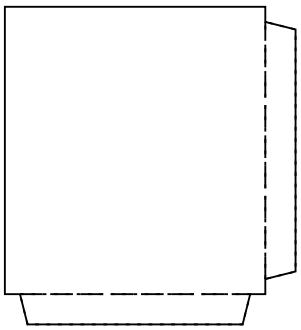
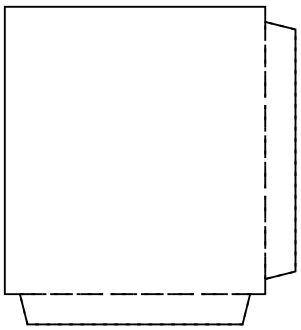
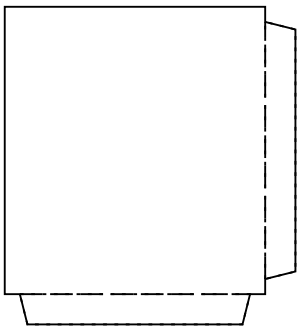
W6 | cut 1
38.44 x 42.00 mm



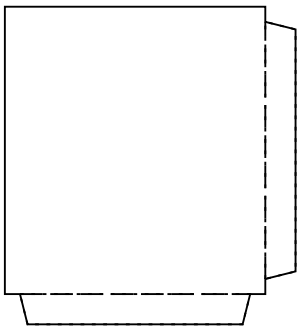
W7 | cut 1
38.44 x 42.00 mm



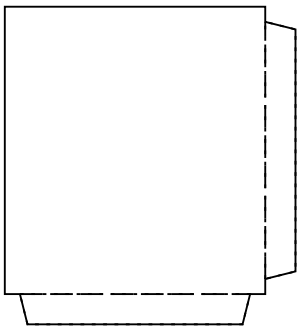
W8 | cut 1
38.44 x 42.00 mm



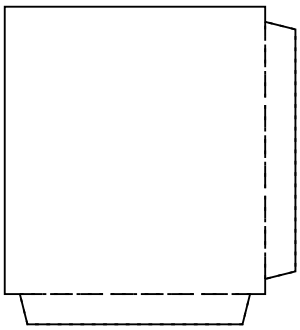
W2 | cut 1
38.44 x 42.00 mm



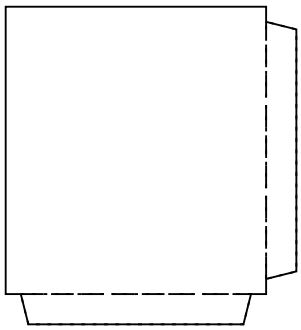
W3 | cut 1
38.44 x 42.00 mm



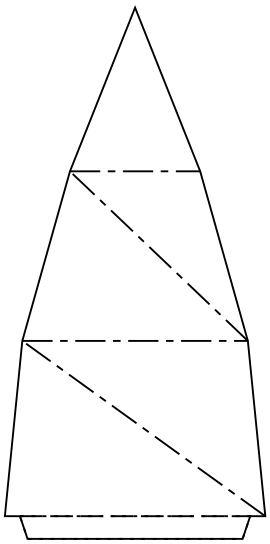
W4 | cut 1
38.44 x 42.00 mm



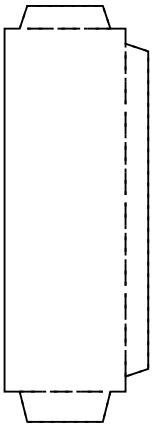
W5 | cut 1
38.44 x 42.00 mm



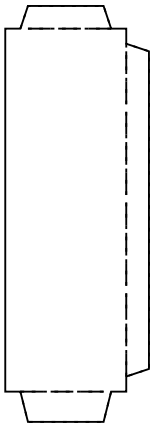
G7 | cut 1
34.44 x 70.25 mm



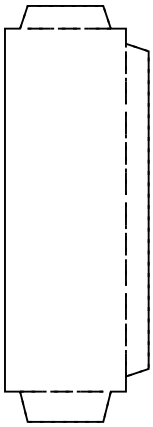
P1 | cut 1
19.00 x 55.00 mm



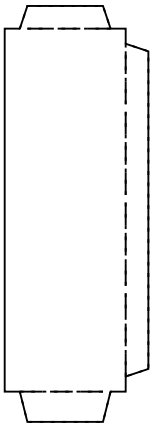
P2 | cut 1
19.00 x 55.00 mm



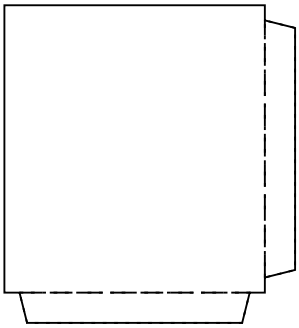
P3 | cut 1
19.00 x 55.00 mm



P4 | cut 1
19.00 x 55.00 mm



W1 | cut 1
38.44 x 42.00 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.

Open-Sector Observatory

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Finished size: 90 x 90 x 83 mm

Materials: 180-220 gsm cardstock; Scissors or craft knife; Scoring tool and ruler; PVA paper glue; Narrow blunt tool for seam pressure

Original static decorative astronomy building; no optics or moving mechanisms.

Dome is a triangulated polygonal hemisphere, not a stretched spherical sheet. The 45-degree open sector is intentional.

Each gore unfolds by exact triangle edge lengths; tabs are rigid faces folded onto their receiving surfaces. Thickness and adhesive clearance are idealized.

Internal diagonal scores in each planar trapezoid are registration lines with zero final bend; only tier and tab creases form the dome.

Physical printing, cutting and assembly remain pending.

Part inventory (cut each instance once):

F: Octagonal foundation

W1: Wall 1

W2: Wall 2

W3: Wall 3

W4: Wall 4

W5: Wall 5

W6: Wall 6

W7: Wall 7

W8: Wall 8

G1: Dome gore 1

G2: Dome gore 2

G3: Dome gore 3

G4: Dome gore 4

G5: Dome gore 5

G6: Dome gore 6

G7: Dome gore 7

P1: Pedestal side 1

P2: Pedestal side 2

P3: Pedestal side 3

P4: Pedestal side 4

PT: Pedestal top

T1: Telescope face 1

T2: Telescope face 2

T3: Telescope face 3

T4: Telescope face 4

1. Cut and score [F, W1, W2, W3, W4, W5, W6, W7, W8, G1, G2, G3, G4, G5, G6, G7, P1, P2, P3, P4, PT, T1, T2, T3, T4]: Print at 100%; confirm the 50 mm ruler. Cut every outline, including tapered tabs. Score dashed folds. Keep IDs beside pieces until fitted. All glue tabs are included in the nets.

2. Build the central pedestal [P1, P2, P3, P4, PT]: Fold P1-P4 into a 16 x 16 x 48 mm square column. Turn long 3 mm tabs inward by 90 degrees; glue each behind the next side. Close P4 to P1 while both ends are open, pressing with a ruler through the ends. Fold bottom 4 mm tabs inward and top 3 mm tabs inward; glue PT onto the top tabs, pressing from the open bottom. Dry.

3. Mount pedestal to foundation [F, P1, P2, P3, P4]: Center the pedestal on F with its corners 8 mm each side of the center in both directions. Orient its square toward the midpoint of edge W1 (the missing dome sector). Glue its four inward 4 mm feet to F. Press through the still-open surrounding space and dry fully.

4. Form the open telescope tube [T1, T2, T3, T4]: Join T1-T4 into an 8 x 8 mm square tube, length 32 mm. Fold each 2 mm long-edge tab inward 90 degrees and glue behind the next face; close T4 to T1. Both tube ends stay open so a narrow tool can press all four seams. This is a static decorative tube without glass or optics.

5. Mount the supported telescope [T1, PT]: Glue the underside of T1 directly to PT over an 8 x 16 mm contact rectangle. The rear tube end aligns with the rear pedestal edge; the forward end projects 16 mm beyond the front edge. Aim toward the midpoint of W1. Tube underside is 48 mm above F; no hidden support is needed. Let dry before adding walls.

6. Wrap the octagonal building [W1, W2, W3, W4, W5, W6, W7, W8]: Each wall is 34.44 x 38 mm. Fold its right 4 mm tab inward through 45 degrees onto the next wall; fold bottom tabs inward 90 degrees. Assemble W1-W8 clockwise viewed from above, matching F edges. Glue bottom tabs to F, then close W8 to W1. Press all seams through the completely open roof. Let dry; the walls have no separate roof disk.

7. Preform the dome gores [G1, G2, G3, G4, G5, G6, G7]: G1-G7 each contain five exact triangles: two split trapezoid tiers and one crown triangle. Score all four internal edges. The diagonal in each trapezoid remains flat (0 degree bend); bend the horizontal tier creases inward to follow the faceted hemisphere. Equator radius is 45 mm; tier heights above walls are 22.50 and 38.97 mm, crown 45 mm. Do not stretch or round the facets.

8. Install dome gore 1 [G1, W2]: Place G1 over W2; its 34.44 mm lower edge matches that wall exactly. Fold the lower 3 mm tab down behind the wall and glue, pressing from inside. Leave the right tabs exposed for the next gore. Let each seam set before continuing.

9. Install dome gore 2 [G2, W3, G1]: Place G2 over W3; its 34.44 mm lower edge matches that wall exactly. Fold the lower 3 mm tab down behind the wall and glue, pressing from inside. Glue the left meridian of G2 over the three 3 mm tabs on G1, working upward from the equator. Each meridian segment is 23.29 mm; tabs stop 2 mm short of endpoints. Match vertices, not tab tips. Leave the right tabs exposed for the next gore. Let each seam set before continuing.

10. Install dome gore 3 [G3, W4, G2]: Place G3 over W4; its 34.44 mm lower edge matches that wall exactly. Fold the lower 3 mm tab down behind the wall and glue, pressing from inside. Glue the left meridian of G3 over the three 3 mm tabs on G2, working upward from the equator. Each meridian segment is 23.29 mm; tabs stop 2 mm short of endpoints. Match vertices, not tab tips. Leave the right tabs exposed for the next gore. Let each seam set before continuing.

11. Install dome gore 4 [G4, W5, G3]: Place G4 over W5; its 34.44 mm lower edge matches that wall exactly. Fold the lower 3 mm tab down behind the wall and glue, pressing from inside. Glue the left meridian of G4 over the three 3 mm tabs on G3, working upward from the equator. Each meridian segment is 23.29 mm; tabs stop 2 mm short of endpoints. Match vertices, not tab tips. Leave the right tabs exposed for the next gore. Let each seam set before continuing.

12. Install dome gore 5 [G5, W6, G4]: Place G5 over W6; its 34.44 mm lower edge matches that wall exactly. Fold the lower 3 mm tab down behind the wall and glue, pressing from inside. Glue the left meridian of G5 over the three 3 mm tabs on G4, working upward from the equator. Each meridian segment is 23.29 mm; tabs stop 2 mm short of endpoints. Match vertices, not tab tips. Leave the right tabs exposed for the next gore. Let each seam set before continuing.

13. Install dome gore 6 [G6, W7, G5]: Place G6 over W7; its 34.44 mm lower edge matches that wall exactly. Fold the lower 3 mm

tab down behind the wall and glue, pressing from inside. Glue the left meridian of G6 over the three 3 mm tabs on G5, working upward from the equator. Each meridian segment is 23.29 mm; tabs stop 2 mm short of endpoints. Match vertices, not tab tips. Leave the right tabs exposed for the next gore. Let each seam set before continuing.

14. Install dome gore 7 [G7, W8, G6]: Place G7 over W8; its 34.44 mm lower edge matches that wall exactly. Fold the lower 3 mm tab down behind the wall and glue, pressing from inside. Glue the left meridian of G7 over the three 3 mm tabs on G6, working upward from the equator. Each meridian segment is 23.29 mm; tabs stop 2 mm short of endpoints. Match vertices, not tab tips. This is the final gore: leave both sides of the missing sector above W1 open. Reach through that 34.44 mm-wide equatorial opening to press the final meridian and wall tab; do not glue across it.

15. Static display [F, G1, G7, T1]: The 45-degree open dome sector narrows to the crown and exposes the fixed telescope. Keep on a dry flat surface. Dome and telescope do not rotate. Paper thickness, glue thickness and springback are idealized; actual print/cut/assembly verification is deferred.