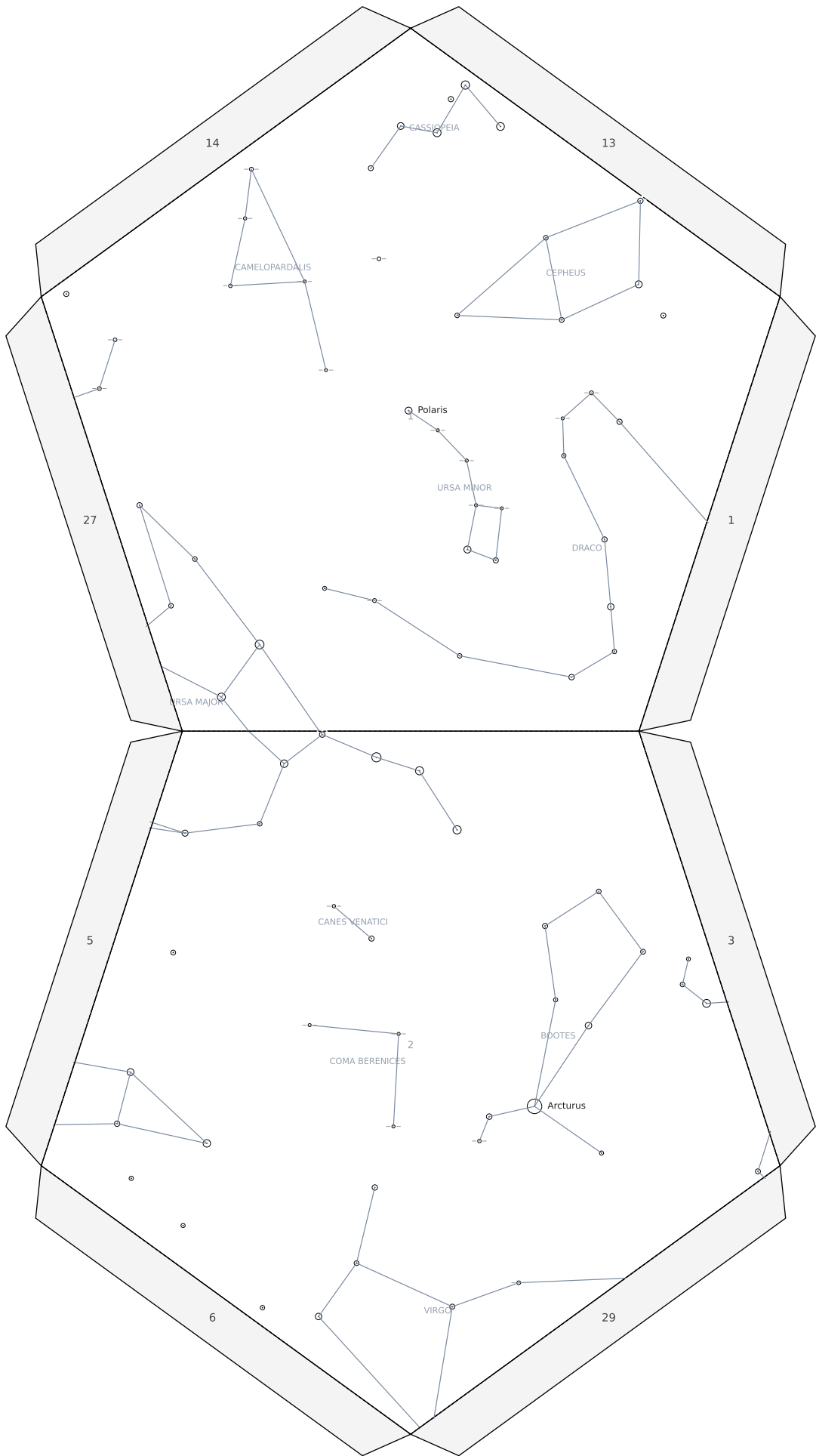
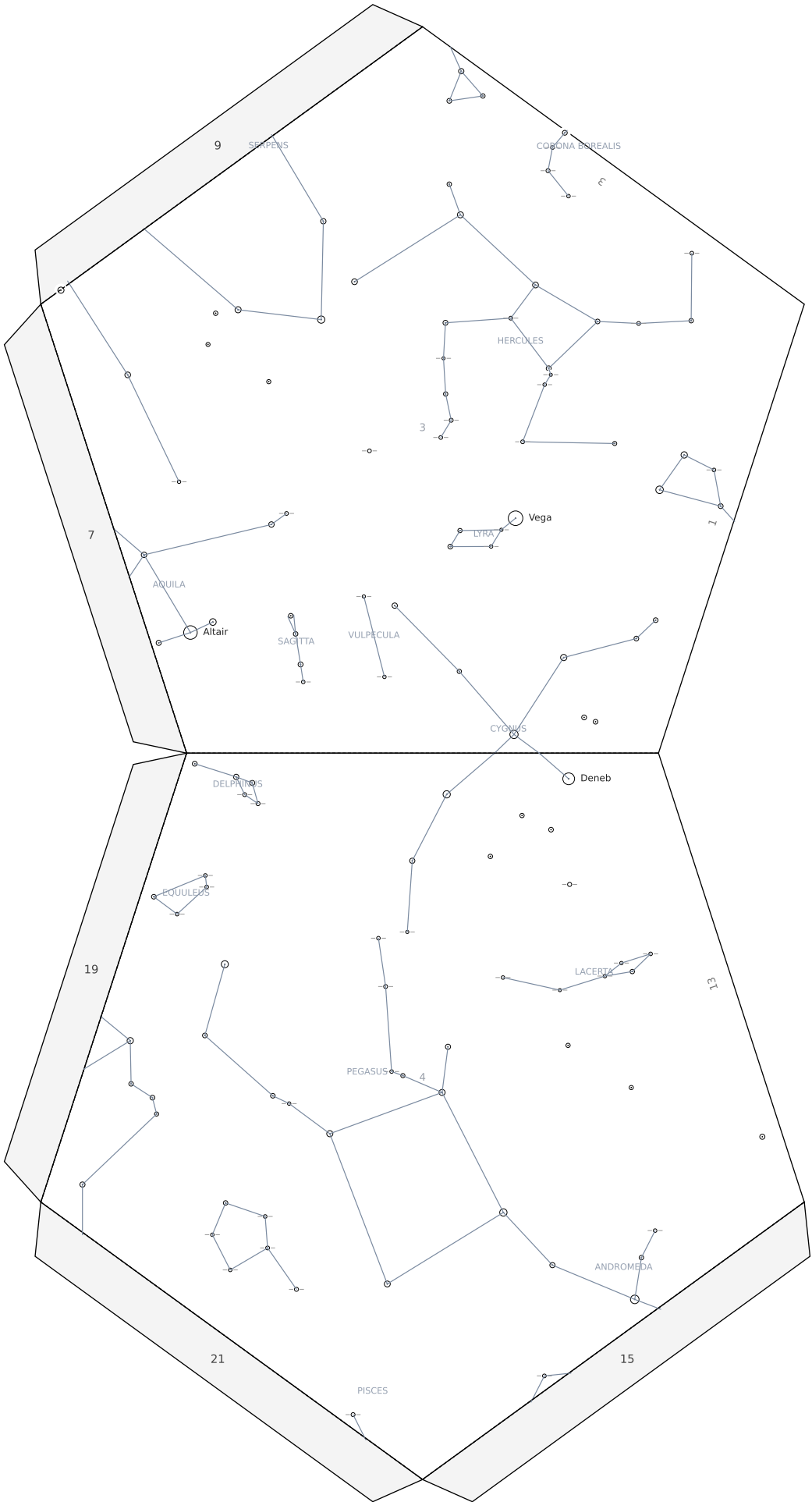


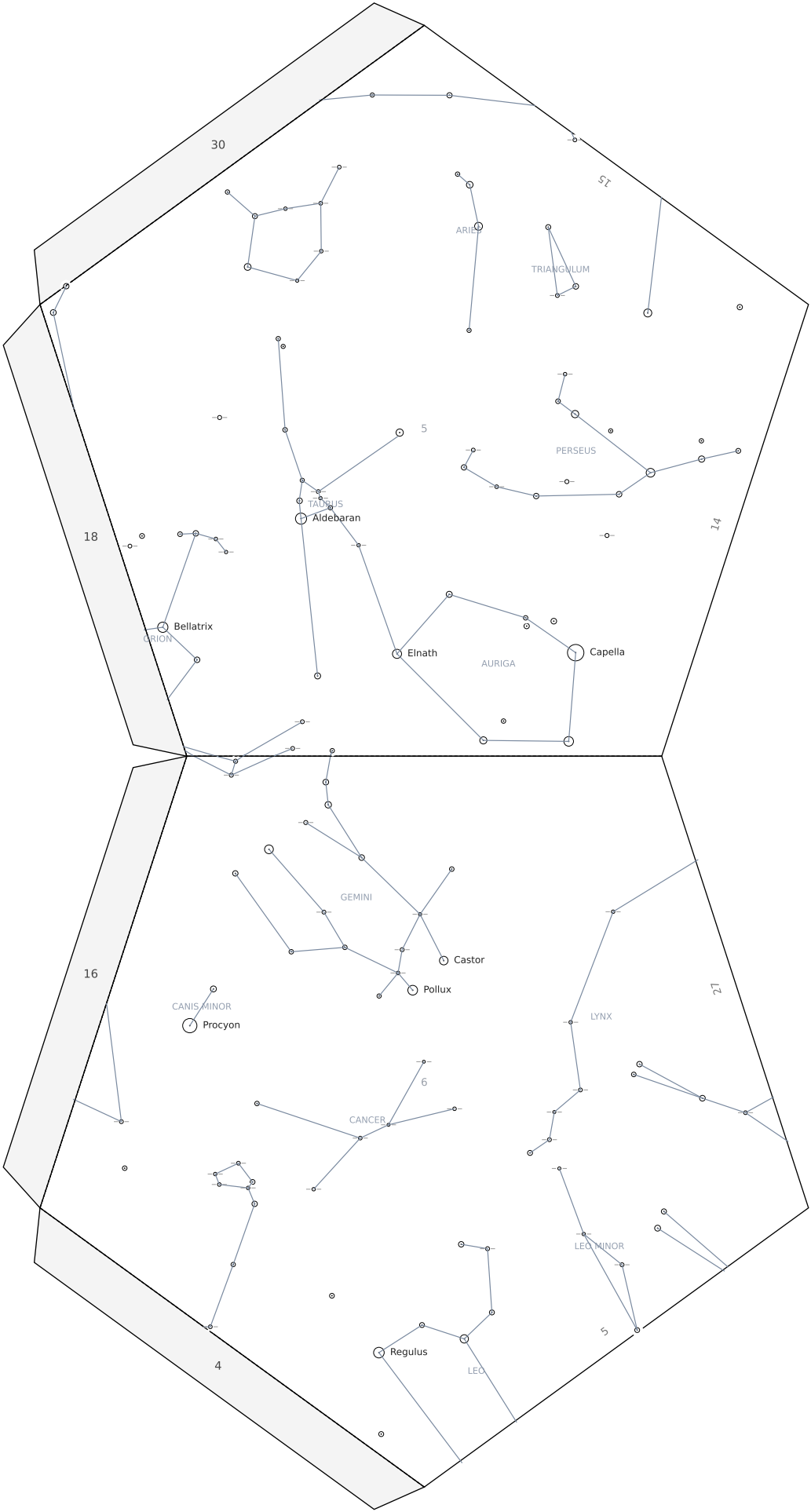
Print at 100% on A4 card. Pierce every circle (a pin for the small ones). Fold all dashed lines AWAY from this printed side. Numbers match tab to edge.



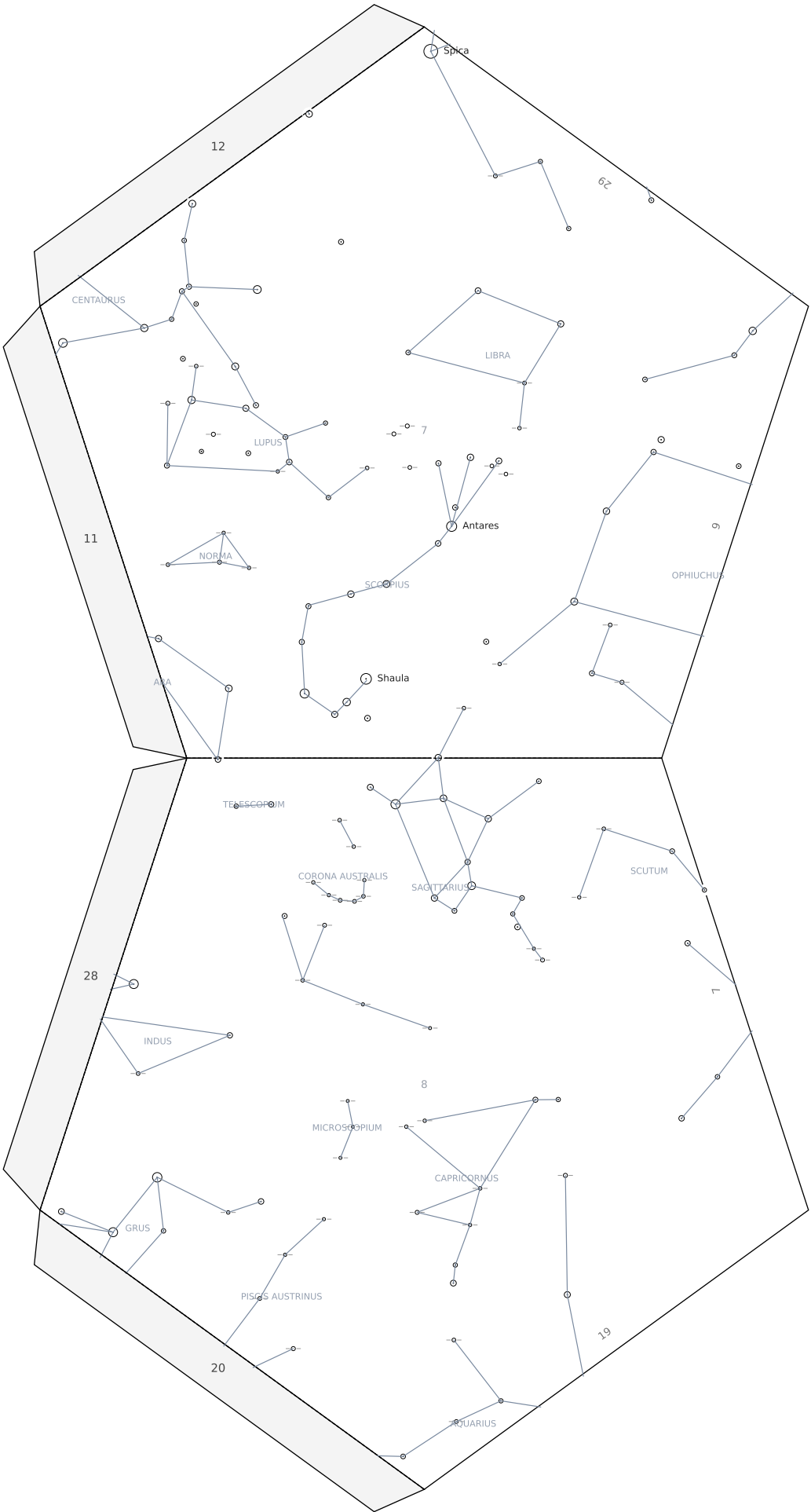
Print at 100% on A4 card. Pierce every circle (a pin for the small ones). Fold all dashed lines AWAY from this printed side. Numbers match tab to edge.



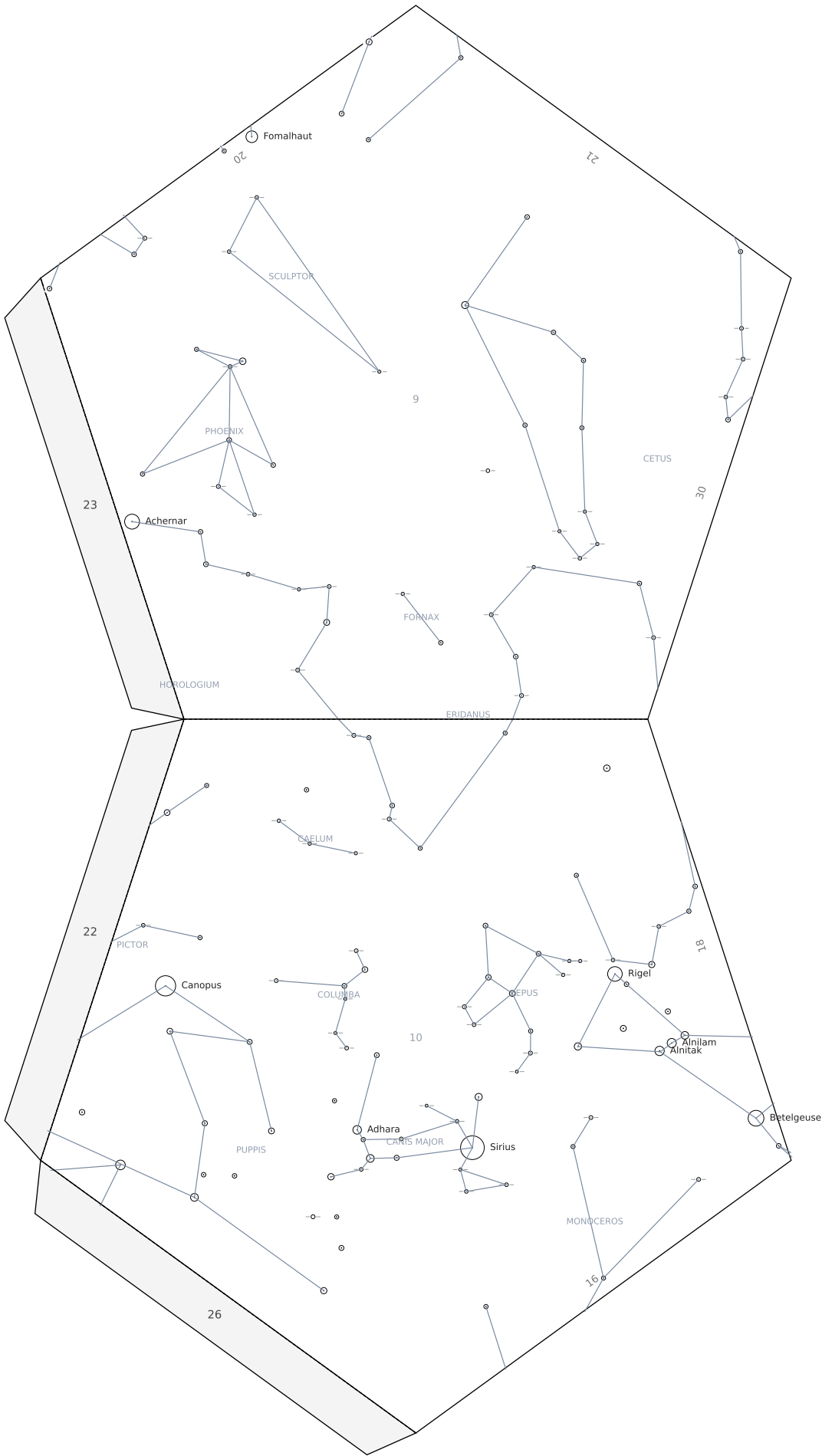
Print at 100% on A4 card. Pierce every circle (a pin for the small ones). Fold all dashed lines AWAY from this printed side. Numbers match tab to edge.



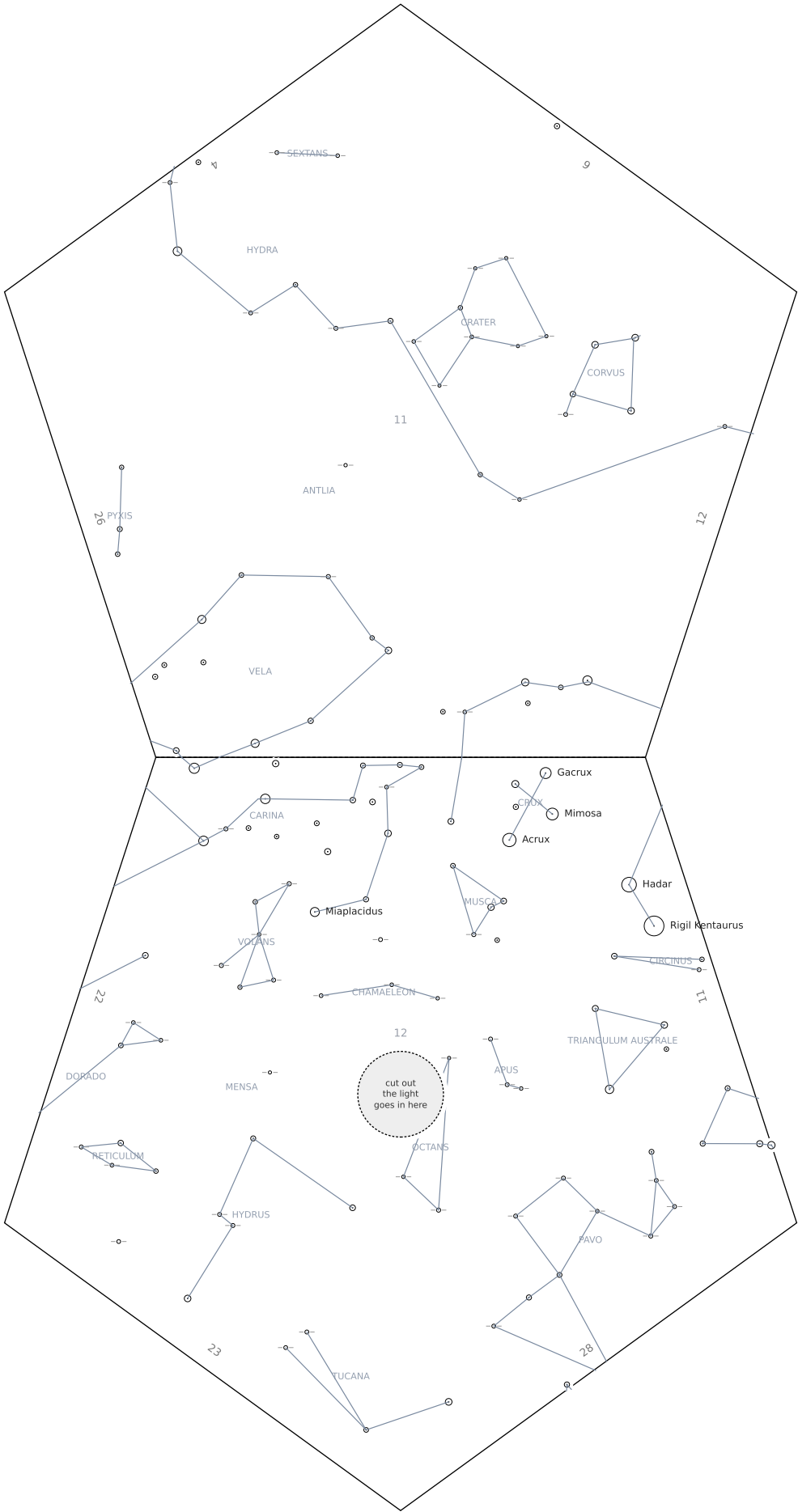
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A PLANETARIUM YOU CUT OUT

a paper star globe. 12 faces, 751 holes, every star to magnitude 4.0 in its true place.

- 1 Print** Sheets 1 to 6 on the heaviest card your printer takes (160 to 200 g/m²). Print at 100%, no scaling. The bar at the foot of each sheet must measure 50 mm; if it does not, fix the print scale before cutting.
- 2 Pierce** Work on a soft mat. Pierce each circle with a pin, needle or awl, opening it to the drawn size. Big circles are bright stars: open them fully. Tiny ones need only the pin. Ten holes sit on a fold line; pierce them before you fold and they will open again when the crease sets.
- 3 Cut** Cut around each pair of pentagons including the grey tabs. Cut out the dashed disc on sheet 6 for the light. Do not cut the line between the two pentagons: that is a fold.
- 4 Fold** Score every pentagon edge and every tab root with a ruler and the back of a knife, then fold the tabs and the shared edge AWAY from the printed side. The printing is the outside of the globe. Seen from outside the constellations are mirror images of a star chart; that is correct, the light inside sees them the right way round.
- 5 Glue** Each tab carries a number. Glue it under the edge of the other pentagon that carries the same number (the numbers sit just inside the edges). Start from sheet 1 (north) and work down; leave sheet 6 (south, with the disc) for last so you can reach inside.
- 6 Light** Push a single small bright LED through the disc, pointing up: a keyring light or a bare LED on a coin cell. The smaller the light source the sharper the stars; a phone torch works but gives soft dots. A dark room, a white ceiling, and Polaris is straight above the north face.

What the light throws

Left: every hole traced from these printed sheets onto a 4 m ceiling with the lamp 1.9 m below (dots), over the constellation lines from the catalog. Right: a camera at the centre of the folded globe looking at Orion.

