Draw a Capitol Building with Mirror Symmetry

Original tasks 1, 2, 3, 4 / complete keys

Task 1

On a half-drawn plate, the left main block corner is 6 cm from the axis at height 4 cm above the baseline. Where is the matching right corner?

Answer: 6 cm from the axis on the right, at height 4 cm above the baseline.

Reason: Mirror symmetry requires equal distance from the axis and equal height above the baseline.

Check: Measure the right corner's distance from the axis and its height; both should equal the left values.

Task 2

A left window is 2 cm from the axis at height 3 cm. A right window is drawn 3 cm from the axis at height 3 cm. Is it symmetric?

Answer: No. The right window should be 2 cm from the axis, not 3 cm.

Reason: The heights match, but the distances from the axis differ, so the pair is not mirror-symmetric.

Check: Compare the two distances from the axis; they must be equal.

Task 3

The left dome top is on the axis at height 10 cm. The right dome top is drawn 1 cm to the right of the axis at height 10 cm. What correction is needed?

Answer: Move the right dome top onto the axis at height 10 cm.

Reason: A point on the axis mirrors to the same point on the axis; a 1 cm offset breaks symmetry.

Check: Measure the right dome top's distance from the axis; it should be 0 cm.

Task 4

After drawing, the left steps are 4 cm from the axis and the right steps are 4.2 cm from the axis. Your chosen tolerance is 2 mm. Is the drawing acceptable?

Answer: No. The difference is 0.2 cm, which equals 2 mm, so it is at the tolerance limit; adjust to make the distances equal.

Reason: 0.2 cm equals 2 mm. The tolerance is 2 mm, so the pair is borderline and should be corrected for clear symmetry.

Check: Subtract the smaller distance from the larger; compare the result with your tolerance.

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Source rubric / reflection

- [ ] The vertical mirror axis is clearly drawn and the building is centered on it.
- [ ] Major features on the right match left-side features in distance from the axis.
- [ ] Major features on the right match left-side features in height above the baseline.
- [ ] The fold test shows matching features within the chosen tolerance.
- [ ] The drawing is complete: steps, main block, dome, and flagpole are present.
- [ ] Valid alternative line styles and small decorative choices are accepted if positions and sizes match.

Reflection: What did you check, what did you change, and what will you try next?