Draw an All-Seeing Eye Emblem with Rayed Triangle

Original tasks 1, 2, 3 / complete keys

Task 1

Using triangle height 10 cm and base 12 cm, place the eye center one-third of the height below the top vertex. State the distance from the top vertex to the eye center.

Answer: The eye center is 10/3 cm, about 3.33 cm, below the top vertex.

Reason: One-third of the triangle height is 10 divided by 3. This places the eye on the axis at a consistent proportional position.

Check: Measure from the top vertex down the axis; the distance should be about 3.33 cm. Confirm the eye center lies on the axis.

Task 2

An eye has width 8 cm and height 4 cm. What is the maximum iris diameter that keeps the iris fully inside the lids if the iris is centered?

Answer: The maximum iris diameter is 2 cm, half the eye height, per the stated convention.

Reason: The convention limits the iris diameter to no more than half the eye height. Half of 4 cm is 2 cm, so a centered iris larger than 2 cm would violate the stated rule.

Check: Draw a 2 cm circle centered at the eye center; it should stay fully inside the lids with a gap above and below. A larger circle would exceed the half-height limit.

Task 3

You want 10 rays placed symmetrically on an isosceles triangle: one ray start at the top vertex on the symmetry axis, then mirrored pairs of start points placed by reflection across the axis. If you place 4 mirrored pairs along the two equal sides, and each pair is at a perpendicular distance from the axis of 1 cm, 2 cm, 3 cm, and 4 cm respectively, how many ray starts are on the sides, and how many remain for the base?

Answer: The 4 mirrored pairs give 8 ray starts on the sides (4 left + 4 right). With the top vertex already counted, 10 - 1 - 8 = 1 start remains, placed where the axis meets the base.

Reason: Each mirrored pair contributes two starts, one on each side, at equal perpendicular distance from the axis. Four pairs give 8 starts. The top vertex is 1 start on the axis. Subtracting from the total of 10 leaves 1 start for the base-axis intersection, which keeps the count odd and symmetric.

Check: Count the starts: 1 top vertex + 4 left + 4 right + 1 base-axis point = 10 rays. Confirm each left-side start has a matching right-side start at the same perpendicular distance from the axis.

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Original tasks 4 / complete keys

Task 4

A drawing has left eye corner 2.5 cm from the axis and right eye corner 3.0 cm from the axis. Is the eye centered? If not, what adjustment makes it centered?

Answer: No. Move the right corner inward by 0.5 cm, or move the left corner outward by 0.5 cm, so both are 2.75 cm from the axis.

Reason: Centering requires equal distances from the axis. The average of 2.5 and 3.0 is 2.75 cm.

Check: Measure both corner distances after adjustment; they should match at 2.75 cm.

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Source rubric / reflection

- [ ] Symmetry axis is vertical and all features are mirrored across it.
- [ ] Triangle is isosceles with equal side lengths and equal base distances from the axis.
- [ ] Eye is centered on the axis with equal left and right corner distances.
- [ ] Iris is fully inside the lids and centered at the eye center.
- [ ] Rays are evenly spaced, mirrored, and consistent in length or follow a stated symmetric pattern.
- [ ] Line hierarchy is clear: main shapes heavier, rays and construction marks lighter.
- [ ] Valid alternatives are accepted if symmetry, centering, and stated rules are preserved.

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