Asymmetrical Fish Scales: Mirrored and Offset Row Drawing

Original tasks 1, 2 / complete keys

Task 1

Draw one row of five scales with scale width 10 mm and row height 8 mm. Mirror the row across a center line. State the distance of the first scale from the center line and its mirror.

Answer: Place the center line at 0 mm. Use 10 mm-wide scales with a 2 mm gap between adjacent scales, so centers sit at -24 mm, -12 mm, 0 mm, +12 mm, and +24 mm (12 mm center-to-center spacing). The first scale is 24 mm left of center, and its mirror is 24 mm right of center. The scale at -12 mm mirrors the scale at +12 mm, and the middle scale sits on the axis. The row spans 58 mm from the left edge of the leftmost scale to the right edge of the rightmost scale (five 10 mm scales plus four 2 mm gaps).

Reason: Mirroring reflects each scale's distance across the center line, so the left and right positions match in distance but opposite in direction.

Check: Measure from the center line to the leftmost scale center (-24 mm) and to the rightmost scale center (+24 mm); the distances should be equal. Also confirm the middle scale is centered on the axis at 0 mm and that the -12 mm and +12 mm scales are mirror pairs.

Task 2

Draw two rows with scale width 12 mm. Row 1 starts at the left edge. Row 2 is offset 6 mm to the right. Describe the horizontal shift between the first scale of row 1 and the first scale of row 2.

Answer: The first scale of row 2 is 6 mm to the right of the first scale of row 1.

Reason: An offset row shifts every scale by the same amount, so the starting position moves by the offset value.

Check: Measure the horizontal distance between the first scale's left endpoint in row 1 and in row 2; it should be 6 mm.

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Original tasks 3, 4 / complete keys

Task 3

Design a three-row layout: row 1 mirrored, row 2 offset 5 mm left, row 3 mirrored. Use scale width 10 mm and row height 8 mm. State one way the layout is asymmetric.

Answer: The layout is asymmetric because row 2 is shifted left while rows 1 and 3 are mirrored. The offset row breaks the symmetry between the mirrored rows.

Reason: Mirrored rows are symmetric within themselves, but an offset row between them creates a mismatch in scale positions across rows.

Check: Compare the position of a scale in row 1 with the nearest scale in row 2; the 5 mm shift should be visible and consistent.

Task 4

A learner intends a four-row layout with no repeated adjacent rules: row 1 offset 4 mm right, row 2 offset 4 mm right, row 3 mirrored, row 4 offset 4 mm left. Identify one definite problem with the layout as described and suggest a fix.

Answer: Problem: rows 1 and 2 both use the same offset rule (4 mm right), which violates the stated intent of no repeated adjacent rules. Fix: change row 2 to a different rule, such as mirroring it or offsetting it 4 mm left, so adjacent rows differ.

Reason: The learner stated that adjacent rows should not repeat the same rule. Rows 1 and 2 are both offset 4 mm right, so the layout contradicts its own stated intent. Changing row 2 removes the repetition.

Check: List each row's rule and shift value. Check that no two adjacent rows share the same rule and shift. Confirm row 2 has been changed to a different rule from row 1.

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Source rubric / reflection

- [ ] Each row has a stated rule: mirrored, offset, or mixed.
- [ ] Arc endpoints lie on the baseline and the lowest point touches the midline.
- [ ] Mirrored rows show matching distances from the center line.
- [ ] Offset rows use a consistent shift value.
- [ ] The overall layout is asymmetric and the asymmetry is intentional.
- [ ] Valid alternatives, such as reversed arc curvature or partial mirroring, are accepted if the row rule is clear.

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