Fish Symmetry Drawing: Mirror Axis Construction

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

Task 1

A half-fish has a widest body point 5 cm left of the axis at height 7 cm. State the matching right-side point.

Answer: 5 cm right of the axis at height 7 cm.

Reason: Mirror points keep the same height and equal distance on the opposite side of the axis.

Check: Measure 5 cm to the right of the axis at height 7 cm and compare with the left point.

Task 2

A left pectoral fin tip is 2.5 cm from the axis at height 3 cm. A right pectoral fin tip is drawn 3 cm from the axis at height 3 cm. Is the pair symmetric under a 0.5 cm example tolerance?

Answer: No. The distances differ by 0.5 cm, which reaches the example tolerance boundary; adjust the right fin to 2.5 cm for a clear match.

Reason: The heights match, but the distances are not equal. The difference is 3 minus 2.5 equals 0.5 cm.

Check: Measure both distances from the axis and subtract the smaller from the larger.

Task 3

A fish has a dorsal fin drawn once on the axis and a tail fin centered on the axis. A pelvic fin is 1.5 cm left of the axis at height 2 cm. Where should the matching pelvic fin go?

Answer: 1.5 cm right of the axis at height 2 cm.

Reason: The pelvic fin is a paired fin, so it needs a mirror partner at the same height and equal distance.

Check: Measure 1.5 cm right of the axis at height 2 cm and confirm the height matches.

Task 4

Three checkpoint pairs measure: widest body 4 cm left and 4.2 cm right; pectoral tip 3 cm left and 3 cm right; tail tip 2 cm left and 1.8 cm right. Using a 0.5 cm example tolerance, which pairs pass?

Answer: The pectoral pair passes exactly. The widest body pair differs by 0.2 cm and passes under the example tolerance. The tail pair differs by 0.2 cm and passes under the example tolerance.

Reason: Subtract the smaller distance from the larger for each pair: 0.2 cm, 0 cm, and 0.2 cm. All are below 0.5 cm.

Check: Record each pair in the same unit, subtract, and compare each difference with the chosen tolerance.

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Source rubric / reflection

- [ ] A vertical mirror axis is clearly drawn and labeled.
- [ ] The body outline has corresponding points at equal distances from the axis.
- [ ] Each paired fin has a partner at the same height and equal distance from the axis.
- [ ] Centered fins are balanced on the axis.
- [ ] Three checkpoint pairs are measured in the same unit and recorded.
- [ ] Valid shape alternatives are accepted when the mirror and pairing checks pass.

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