Symmetry Butterfly Drawing: Half to Whole

Original tasks 1, 2, 3 / complete keys

Task 1

A half-butterfly has a wing tip 5 cm from the axis and an outer corner 3 cm from the axis. Transfer both points to the blank side and give the distances.

Answer: The matching wing tip is 5 cm from the axis and the matching outer corner is 3 cm from the axis, both measured perpendicular to the axis.

Reason: Mirror symmetry requires equal perpendicular distances on opposite sides of the axis.

Check: Measure each new point from the axis with the ruler at a right angle and compare with the original distance.

Task 2

The drawn half connects points in the order A, B, C, D. The blank half has matching points A1, B1, C1, D1. State the correct connection order and one way to check it.

Answer: Connect A1 to B1, B1 to C1, and C1 to D1. Check by comparing each segment with its partner across the axis after folding.

Reason: The connection order must match the drawn half so the outline shape is preserved.

Check: Fold along the axis and confirm each segment lies over its partner within the chosen tolerance.

Task 3

A learner transfers a point 4 cm from the axis but measures diagonally, landing 4.5 cm away along the paper edge. Explain the error and give the corrected distance.

Answer: The error is measuring diagonally instead of perpendicular. The corrected distance is 4 cm measured straight across at a right angle to the axis.

Reason: Only perpendicular distance defines the mirror position; diagonal measurement changes the effective distance.

Check: Place the ruler at a right angle to the axis and re-measure the point.

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Original tasks 4 / complete keys

Task 4

After folding, one pair of points differs by 3 mm on a drawing where the chosen tolerance is 2 mm. State whether it passes and what to do next.

Answer: It does not pass because 3 mm is greater than the 2 mm tolerance. Move the outlier point closer to the correct distance and re-check.

Reason: The tolerance is the maximum allowed difference for a passing check.

Check: Re-measure both distances from the axis and confirm the difference is 2 mm or less.

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Source rubric / reflection

- [ ] Axis is straight and clearly marked.
- [ ] At least five key points are transferred at equal perpendicular distances within the stated tolerance.
- [ ] Matching points are connected in the same order as the drawn half.
- [ ] Outline passes a fold check or a distance check.
- [ ] Decoration, if added, stays inside the mirrored outline.
- [ ] Labels or notes may use different letter styles; only geometric points are graded.

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