# Draw Overlapping Fish Scale Rows on a Curved Body Panel

Original tasks 1, 2, 3 / complete keys

Task 1

A straight practice strip is 96 mm long. Scales are 12 mm wide with a 4 mm overlap, giving an 8 mm visible step. Estimate the number of scales in one row and state one check you would use after drawing.

Answer: About 12 scales fit because 96 divided by 8 equals 12. Check by counting the drawn scales and comparing with 12; a difference of one is acceptable.

Reason: The visible step is the scale width minus the overlap, so 12 minus 4 equals 8 mm. Dividing the strip length by the step gives the estimate.

Check: Count the scales in the drawn row and measure two overlaps to confirm they are close to 4 mm.

Task 2

A curved panel is 80 mm tall. Row paths are spaced 10 mm apart. Estimate the number of rows and explain how to check that the row paths follow the curve.

Answer: About 8 rows fit because 80 divided by 10 equals 8. Check by measuring the gap between each row path and the baseline at the left, centre, and right; the gaps should stay within about 2 mm of each other.

Reason: Row count comes from panel height divided by row gap. Curve following is checked by comparing gaps at several points along the panel.

Check: Measure three gaps per row path and record any row where the difference exceeds about 2 mm.

Task 3

You draw a row of 10 scales. Each scale is 12 mm wide and should overlap its neighbour by about 4 mm. You measure hidden portions of 3 mm, 5 mm, and 4 mm on three scales. Are these acceptable, and what would you adjust?

Answer: The values are close to the 4 mm target and are acceptable within about 1 mm. If a later row shows hidden portions outside 3 to 5 mm, redraw that row with the overlap guide.

Reason: The target overlap is one third of 12 mm, about 4 mm. Measurements within about 1 mm of the target keep the row visually consistent.

Check: Measure three overlaps in the row and compare each with the target; mark and redraw any row with values outside the accepted range.

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Original tasks 4 / complete keys

Task 4

A panel curves to the left. You notice that the second row path is 8 mm from the baseline at the left and 14 mm at the right. What is the likely problem and how do you fix it before drawing scales?

Answer: The row path is not following the curve evenly; the gap changes by 6 mm across the panel. Redraw the guide so the gap is about 10 mm at the left, centre, and right before placing scales.

Reason: A changing gap means the path is drifting away from the baseline rather than staying parallel to the curve. Correcting the guide first prevents uneven scale rows.

Check: Measure the gap at three points after redrawing; the values should be within about 2 mm of each other.

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Source rubric / reflection

- [ ] Scale convention is stated and followed consistently across the panel.
- [ ] Row paths follow the body curve and stay roughly parallel to the baseline.
- [ ] Overlap direction is consistent in every row.
- [ ] Spacing between scales and between rows is even within about 2 mm at checked points.
- [ ] Valid alternative scale shapes are accepted if the convention and overlap rule are kept.

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