Draw Tarpon Scale Pattern: Overlapping Shapes Step by Step

Original tasks 1, 2, 3 / complete keys

Task 1

A practice panel is 14 cm wide. Scale centers are spaced 3.5 cm apart. How many scales fit in one row if the first center is 1.75 cm from the left edge?

Answer: Four scales.

Reason: Centers at 1.75, 5.25, 8.75, and 12.25 cm fit within 14 cm. The next center at 15.75 cm exceeds the panel width.

Check: Add 3.5 cm repeatedly from 1.75 cm and count how many centers remain less than or equal to 14 cm.

Task 2

Two rows use 3 cm vertical spacing and 1 cm overlap depth. The first row top edge is at 2 cm from the panel top. Where is the second row top edge, and how much of the first row scale bottom is covered?

Answer: The second row top edge is at 5 cm from the panel top, and 1 cm of the first row scale bottom is covered.

Reason: Add the 3 cm row spacing to the first row top edge: 2 plus 3 equals 5 cm. The overlap depth is given as 1 cm, so the lower scale covers 1 cm of the upper scale bottom.

Check: Measure from the panel top to each row top edge and confirm the difference is 3 cm. Measure the covered portion and confirm it is 1 cm.

Task 3

A scale guide box is 3 cm wide by 4 cm tall. You want a row of five scales with 0.5 cm gaps between guide boxes. What total row width do the five guide boxes and four gaps require?

Answer: 17 cm.

Reason: Five guide boxes at 3 cm each equal 15 cm. Four gaps at 0.5 cm each equal 2 cm. The total is 15 plus 2 equals 17 cm.

Check: Multiply 5 by 3, multiply 4 by 0.5, and add the two results.

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Original tasks 4 / complete keys

Task 4

A panel has three rows with six scales per row. You decide to increase horizontal spacing so only five scales fit per row, but keep three rows. What is the new total scale count, and how many fewer scales is that than the original plan?

Answer: The new total is fifteen scales, which is three fewer than the original eighteen.

Reason: Three rows times five scales per row equals fifteen. The original was three times six equals eighteen. The difference is eighteen minus fifteen equals three.

Check: Multiply rows by scales per row for both plans, then subtract the smaller total from the larger.

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Source rubric / reflection

- [ ] Scale shape follows the defined rounded shield convention or a valid alternative with the same proportion.
- [ ] All scales in a row have consistent width and height within the chosen margin.
- [ ] Rows are staggered by half a scale width.
- [ ] Overlap order is consistent: lower scales cover the bottom of upper scales.
- [ ] Hidden overlap lines are lightened or erased; visible edges are darkened.
- [ ] Overlap depth is consistent at three measured locations.
- [ ] Panel includes a label with scale dimensions and overlap depth used.

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