Draw Realistic Mermaid Tail Scales: Row Construction and Fin Transition

Original tasks 1, 2, 3 / complete keys

Task 1

A tail outline is 18 cm long. Using a hypothetical row height of 2 cm, how many full rows fit before a three-row fin-transition zone?

Answer: Six full rows fit before the transition zone.

Reason: Eighteen divided by 2 equals 9 total rows. Subtract 3 transition rows to get 6 full rows.

Check: Multiply 6 full rows by 2 cm to get 12 cm, add 3 transition rows at 2 cm to get 6 cm, and confirm 12 plus 6 equals 18 cm.

Task 2

A scale row has 8 scales across. The next row is offset by half a scale width. Describe how many scale positions the offset row should show across the same width, using the convention that edge scales may be partial.

Answer: The offset row should show 8 full-scale positions plus two half-scale edge positions, or 9 visible scale shapes if partial edge scales are drawn.

Reason: Half-width offset shifts every scale by half a position, creating partial scales at both edges. Counting full positions plus two halves gives 9 visible shapes.

Check: Sketch a short row of 8 equal marks, shift the next row by half a mark, and count the resulting shapes at both edges.

Task 3

In a fin-transition zone, a flattened scale is 2 cm wide and a fin ray is 0.5 cm wide. If rays emerge between every pair of adjacent flattened scales, how many ray gaps exist across 5 adjacent flattened scales?

Answer: Four ray gaps exist across 5 adjacent flattened scales.

Reason: Gaps between adjacent scales equal the number of scales minus one. Five minus one equals four.

Check: List five scales in a row and count the spaces between them: one between first and second, and so on, totaling four.

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Original tasks 4 / complete keys

Task 4

A student draws 7 rows with a hypothetical row height of 1.2 cm, then adds a 2-row transition zone at the same height. What total tail length does this cover, and what check confirms the row count?

Answer: The total covers 10.8 cm, using 9 rows at 1.2 cm each.

Reason: Seven full rows plus two transition rows equals 9 rows. Nine multiplied by 1.2 cm equals 10.8 cm.

Check: Add 7 and 2 to confirm 9 rows, then multiply 9 by 1.2 and verify the product is 10.8 cm.

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Source rubric / reflection

- [ ] Row lines curve with the tail and are evenly spaced outside the transition zone.
- [ ] Scales overlap the row below by a consistent fraction, approximately one third.
- [ ] Each row is offset by about half a scale width from the row above.
- [ ] Scale size varies modestly while row rhythm remains readable.
- [ ] The final two or three rows flatten and widen into the fin-transition zone.
- [ ] Fin rays begin at the fin base and emerge between flattened scales, not through scale centers.
- [ ] Shadow direction is consistent and supports the overlap convention.
- [ ] Line-weight hierarchy distinguishes outline, scale edges, and shading.

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