Draw Siren Scale Rows: A Step-by-Step Pattern Guide

Original tasks 1, 2, 3 / complete keys

Task 1

A scale unit is 10 mm wide and 8 mm tall with a 2 mm overlap. Row 1 has 4 units. What is the row width and the visible height after 2 rows?

Answer: Row width is 4 times 10 mm, which is 40 mm. Visible row height is 8 mm minus 2 mm, which is 6 mm. After 2 rows, visible height is 2 times 6 mm, which is 12 mm.

Reason: Multiply unit width by unit count for row width. Subtract overlap from unit height for visible row height. Multiply by row count for total visible height.

Check: Measure your drawing: Row 1 should be about 40 mm wide, and two rows should be about 12 mm tall from top to bottom.

Task 2

A scale unit is 14 mm wide. Row 1 starts at the left edge. Row 2 is offset by half a unit. How many millimetres from the left edge does Row 2 start?

Answer: Half of 14 mm is 7 mm, so Row 2 starts 7 mm from the left edge.

Reason: The offset is half the unit width. Divide 14 mm by 2 to get 7 mm.

Check: Mark the left edge, measure 7 mm, and confirm Row 2's first scale begins there.

Task 3

You draw 5 rows with a visible row height of 9 mm. What is the total visible height? If your unit height is 12 mm, what is the overlap?

Answer: Total visible height is 5 times 9 mm, which is 45 mm. The overlap is 12 mm minus 9 mm, which is 3 mm.

Reason: Multiply visible row height by row count. Subtract visible row height from unit height to find overlap.

Check: Measure from the top of Row 1 to the bottom of Row 5; it should be about 45 mm. Check that each row tucks under the one above by about 3 mm.

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Original tasks 4 / complete keys

Task 4

A tail tip row has room for 3 full units and a half unit. Your unit width is 12 mm. How wide is the tapered row?

Answer: Three full units are 3 times 12 mm, which is 36 mm. A half unit is 6 mm. The tapered row is 36 mm plus 6 mm, which is 42 mm.

Reason: Multiply full unit count by unit width, then add half the unit width for the half unit.

Check: Measure the tapered row; it should be about 42 mm wide, and the half unit should be about 6 mm wide.

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Source rubric / reflection

- [ ] Scale units match the recorded width and height within 1 mm.
- [ ] Every other row is offset by half a unit width.
- [ ] Overlap is consistent across all rows.
- [ ] Shadow band sits on the lower edge of each scale and follows the marked light direction.
- [ ] Tail tip tapers by reducing unit count, not unit size.
- [ ] Arithmetic check for visible height matches the drawing within 2 mm.

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