How to Draw Chameleon Scales: Layered Pattern Construction

Original tasks 1, 2, 3 / complete keys

Task 1

A body area is sixteen units wide. The midline row has eight scales. Find the average spacing and the row offset if each scale is two units wide.

Answer: Average spacing is two units per scale; row offset is one unit.

Reason: Divide sixteen by eight to get two. Offset is half the scale width, so one unit.

Check: Multiply the spacing by the count to confirm sixteen, and confirm the offset is half of two.

Task 2

A scale is three units wide and two units tall. What is the row offset, and what overlap height is one quarter of the scale height?

Answer: Row offset is one and a half units; overlap height is half a unit.

Reason: Offset is half the width, so three divided by two equals one and a half. One quarter of two is half.

Check: Double the offset to confirm three, and multiply the overlap by four to confirm two.

Task 3

A midline row has twelve scales across twenty-four units. A later row has nine scales. Is the later row consistent with the midline spacing? Show the arithmetic.

Answer: No. Midline spacing is two units per scale; nine scales across twenty-four units gives about two point seven units per scale, so the row has drifted.

Reason: Divide twenty-four by twelve to get two, then divide twenty-four by nine to get about two point seven. The counts differ, so spacing is inconsistent.

Check: Multiply two by twelve to confirm twenty-four, and multiply two point seven by nine to confirm about twenty-four.

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Original tasks 4 / complete keys

Task 4

You measure three overlaps in a row as zero point four, zero point five, and zero point six units. The scale height is two units. Are the overlaps acceptable under the one-quarter rule? Explain.

Answer: The target overlap is zero point five units. The three measurements are close to the target, so they are acceptable; the zero point four and zero point six differ by only zero point one from the target.

Reason: One quarter of two is zero point five. Compare each measurement to zero point five and note the small differences.

Check: Subtract each measurement from zero point five and confirm the differences are small and consistent.

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Source rubric / reflection

- [ ] Convention scale is drawn, labeled, and applied consistently.
- [ ] Midline row is point to point with a small gap and its count is recorded.
- [ ] Each new row is offset by half a scale width.
- [ ] Overlap is close to one quarter of the scale height in three measured samples per row.
- [ ] Spacing arithmetic is recorded in one consistent unit.
- [ ] Pattern follows the body contour rather than a straight rectangle.
- [ ] Valid alternative scale shapes are accepted if the convention is stated and consistent.

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