Draw Coiled Snake Scales: Belly Bands vs Dorsal Scales

Original tasks 1, 2, 3 / complete keys

Task 1

On a coil with a belly zone on the bottom and a dorsal zone on the top, a student uses 10 mm belly bands and 2 mm dorsal scales. The first two belly bands overlap by 5 mm. Is the overlap correct for the stated convention?

Answer: No. One third of 10 mm is about 3.3 mm, so a 5 mm overlap is too large for the convention.

Reason: The convention sets belly band overlap at about one third of band width. 10 mm divided by 3 is about 3.3 mm. A 5 mm overlap is nearly half the band width, which breaks the rule.

Check: Divide the belly band width by 3 and compare the result with the drawn overlap. If the drawn overlap is much larger or smaller, adjust it.

Task 2

A dorsal zone shows three rows of scales. Row one has four scales, row two has four scales placed directly below row one, and row three has four scales directly below row two. Each scale is 3 mm wide and touches its neighbors. Does this meet the staggered-row rule?

Answer: No. The rows are aligned, not staggered.

Reason: The convention requires each new dorsal row to be staggered by half a scale width. Directly below placement means no stagger, so the rule is broken even though the scales touch correctly.

Check: Compare the position of a scale in row two with the scale above it in row one. If they line up vertically, the row is not staggered.

Task 3

A coil drawing has belly bands that stop at the visible edge and dorsal scales that begin where the belly zone ends. The belly bands are 12 mm wide and overlap by 4 mm. The dorsal scales are 3 mm wide and touch without overlapping. A peer says the drawing mixes the two scale types. Is the peer correct?

Answer: No. The drawing keeps the zones separate and follows the width and overlap rules.

Reason: Belly bands stop at the edge, dorsal scales start after the belly zone, and the sizes and overlaps match the convention. There is no mixing of scale types across zones.

Check: Trace the boundary between belly and dorsal zones. Confirm no belly band enters the dorsal zone and no dorsal scale enters the belly zone.

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Original tasks 4 / complete keys

Task 4

A student draws a comparison key with one belly band labeled 12 mm and one dorsal scale labeled 3 mm. On the coil, the belly bands are 12 mm wide but the dorsal scales are drawn at 6 mm wide. The student says the key makes the drawing correct. Is the student right?

Answer: No. The coil does not match the key.

Reason: The key states 3 mm dorsal scales, but the coil uses 6 mm scales. A correct key must match the drawing; otherwise the comparison is misleading.

Check: Measure three dorsal scales on the coil and compare the average with the key value. If they differ, redraw either the key or the scales so they match.

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Source rubric / reflection

- [ ] Belly bands are consistently wider than dorsal scales, matching the written convention.
- [ ] Belly bands overlap by roughly one third of their width.
- [ ] Dorsal scales touch without overlapping and repeat in staggered rows.
- [ ] Belly bands cross the body; dorsal rows follow the coil curve.
- [ ] A labeled comparison key shows one example of each scale type.
- [ ] Valid alternative shapes are accepted if width, overlap, and direction remain distinct.

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