Fossil Drawing Easy: Shape Breakdowns and Strata Context

Original tasks 1 / complete keys

Task 1

Draw a spiral fossil inside a two-band strata diagram. Use a fossil box 5.5 cm wide and 5 cm tall, place the fossil in the lower band, and draw four coil turns starting 0.5 cm from the center and growing outward by 0.4 cm per turn. Make the upper band 2.5 cm tall and the lower band at least 6 cm tall. Label the bands A and B.

Answer: Two horizontal bands labeled A (top) and B (bottom). Band A is 2.5 cm tall; band B is 6 cm tall (or taller, in which case the margin is larger) so the 5 cm box fits with a 1 cm total vertical margin, about 0.5 cm above and below when centered. In band B, draw a 5.5 cm by 5 cm box with a center cross. Draw a spiral with four turns, each turn about 0.4 cm farther from the center. The outermost turn reaches $0.5 + 4 \times 0.4 = 2.1$ cm from the center. The box half-width is 2.75 cm, leaving $2.75 - 2.1 = 0.65$ cm side margin, which meets the 0.5 cm guideline. The fossil sits inside band B with a vertical margin of at least 0.5 cm.

Reason: The box and band heights use the same unit. The spiral starts 0.5 cm from the center and grows outward by 0.4 cm per turn, so the outermost of four turns reaches $0.5 + 4 \times 0.4 = 2.1$ cm from the center. The box half-width is 2.75 cm, leaving $2.75 - 2.1 = 0.65$ cm of visible side margin, which meets the 0.5 cm guideline. The 5 cm box height needs a band at least 6 cm tall to leave a 0.5 cm margin above and below, so band B is drawn taller than band A. Placing the fossil in one band keeps the strata context clear.

Check: Measure the box (5.5 cm by 5 cm), count four turns, and check that each turn is about 0.4 cm farther out. Confirm the outermost turn reaches about 2.1 cm from the center, leaving about 0.65 cm to the box edge, which meets the 0.5 cm side-margin guideline. Confirm band B is at least 6 cm tall and the fossil is inside band B with a visible vertical margin of at least 0.5 cm.

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Original tasks 2, 3 / complete keys

Task 2

Draw a segmented fossil inside a three-band strata diagram. Use a fossil box 6 cm wide and 3 cm tall, place the fossil in band C, and draw five segment blocks each 1 cm long along a central line. Make bands A and B 2 cm tall and band C at least 4 cm tall. Label the bands A, B, and C.

Answer: Three horizontal bands labeled A, B, and C from top to bottom. Bands A and B are 2 cm tall; band C is at least 4 cm tall so the 3 cm box fits with a 0.5 cm margin above and below. In band C, draw a 6 cm by 3 cm box with a central horizontal line. Place five blocks, each 1 cm long, end to end along the line. The fossil sits inside band C with a margin of at least 0.5 cm above and below.

Reason: Five blocks at 1 cm each total 5 cm, which fits inside the 6 cm box with a 0.5 cm margin on each side. The 3 cm box height needs a band at least 4 cm tall to leave a 0.5 cm margin above and below, so band C is drawn taller than the other bands. Keeping the other bands 2 cm preserves a consistent unit.

Check: Measure the box (6 cm by 3 cm), count five blocks, and confirm each is about 1 cm long. Check that band C is tall enough to contain the fossil with a margin.

Task 3

Draw a ribbed fossil inside a four-band strata diagram. Use a fossil box 7 cm wide and 6 cm tall, place the fossil in band B, and draw five ribs on each side spaced 0.4 cm apart around a central oval 2 cm wide. Make bands A, C, and D 2 cm tall and band B at least 7 cm tall. Label the bands A, B, C, and D.

Answer: Four horizontal bands labeled A, B, C, and D from top to bottom. Bands A, C, and D are 2 cm tall; band B is at least 7 cm tall so the 6 cm box fits with a total vertical margin of 1 cm; center it to leave about 0.5 cm above and below. In band B, draw a 7 cm by 6 cm box with a central vertical oval 2 cm wide and 4 cm tall. Add five ribs on each side, spaced 0.4 cm apart. Total width is 2 cm oval plus 5 x 0.4 cm on each side = 2 + 2.0 + 2.0 = 6.0 cm, which fits inside the 7 cm box with a total side margin of 1.0 cm, or 0.5 cm per side if the fossil is centered. Center the fossil in the box. The fossil sits inside band B with a margin of at least 0.5 cm above and below.

Reason: Five ribs at 0.4 cm spacing occupy 2.0 cm along one side; with a 2 cm oval, total width is 2 + 2.0 + 2.0 = 6.0 cm. A 7 cm box leaves 1.0 cm total side margin, which is 0.5 cm per side only when the fossil is centered, so center it. The 6 cm box height needs band B at least 7 cm tall to leave a 0.5 cm margin above and below.

Check: Measure the box (7 cm by 6 cm), count five ribs per side, and check spacing is about 0.4 cm. Confirm the total ribbed width is about 6 cm and that the fossil is centered in the box, leaving about 0.5 cm on each side. Confirm band B is tall enough and the fossil has a visible margin.

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Original tasks 4 / complete keys

Task 4

Draw a spiral fossil inside a five-band strata diagram. Use a fossil box 8.5 cm wide and 8 cm tall, place the fossil in band D, and draw five coil turns starting 0.6 cm from the center and growing outward by 0.6 cm per turn. Make bands A, B, C, and E 2 cm tall and band D at least 9 cm tall. Label the bands A through E.

Answer: Five horizontal bands labeled A, B, C, D, and E from top to bottom. Bands A, B, C, and E are 2 cm tall; band D is at least 9 cm tall so the 8 cm box fits with a total vertical margin of 1 cm; center it to leave about 0.5 cm above and below. In band D, draw an 8.5 cm by 8 cm box with a center cross. Draw a spiral with five turns, each turn about 0.6 cm farther from the center. The outermost turn reaches $0.6 + 5 \times 0.6 = 3.6$ cm from the center. The box half-width is 4.25 cm, leaving $4.25 - 3.6 = 0.65$ cm side margin, which meets the 0.5 cm guideline. The fossil sits inside band D with a margin of at least 0.5 cm above and below.

Reason: Five turns at 0.6 cm growth reach $0.6 + 5 \times 0.6 = 3.6$ cm from the center. The box half-width is 4.25 cm, leaving $4.25 - 3.6 = 0.65$ cm side margin, which meets the 0.5 cm guideline. Band D must be at least 9 cm tall to contain the 8 cm box with a 0.5 cm margin above and below; draw band D taller and keep the other bands 2 cm.

Check: Measure the box (8.5 cm by 8 cm), count five turns, and check each turn is about 0.6 cm farther out. Confirm the outermost turn reaches about 3.6 cm from the center, leaving about 0.65 cm to the box edge, which meets the 0.5 cm side-margin guideline. Confirm the fossil is inside band D with a visible margin and that all five bands are labeled.

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Source rubric / reflection

- [ ] Fossil outline is clear and closed.
- [ ] Repeating features are evenly spaced within the chosen tolerance.
- [ ] Fossil is placed inside one band with a visible margin.
- [ ] Three to five bands are drawn and labeled.
- [ ] Texture marks are present in each band.
- [ ] Valid alternatives such as coil direction or rib curvature are accepted.

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