Cavern Drawing: Rock Arch, Stalactites, and Depth Layering

Original tasks 1, 2, 3 / complete keys

Task 1

A frame is 10 cm wide and 8 cm high. Mark a far-layer line at 2.5 cm from the top and a near-layer line at 2.5 cm from the bottom. What is the height of the middle layer?

Answer: 3 cm

Reason: The far layer is 2.5 cm and the near layer is 2.5 cm. Together they take 5 cm of the 8 cm height. The middle layer is 8 minus 5, which equals 3 cm.

Check: Add the three layer heights: 2.5 + 3 + 2.5 = 8 cm, matching the frame height.

Task 2

You draw an arch with pillars 5 cm apart in a frame 15 cm wide. Is this close to the suggested one-third proportion? Show the arithmetic.

Answer: Yes, 5 cm is exactly one third of 15 cm.

Reason: One third of 15 cm is 15 divided by 3, which equals 5 cm. The pillar spacing matches the suggested proportion.

Check: Multiply the pillar spacing by 3: 5 times 3 equals 15 cm, the frame width.

Task 3

You plan eight stalactites. You want three in the far layer, three in the middle layer, and the rest in the near layer. How many stalactites are in the near layer?

Answer: 2

Reason: Three plus three equals six stalactites in the far and middle layers. Eight minus six equals two in the near layer.

Check: Add the counts: 3 + 3 + 2 = 8, matching the planned total.

Cavern Drawing: Rock Arch, Stalactites, and Depth Layering

Original tasks 4 / complete keys

Task 4

A stalactite is shaded with light from the upper left. The left side uses the lightest value and the right side uses the darkest value. The background rock behind it is the same value as the left side. What is the main problem, and how do you fix it?

Answer: The background is too light, so the stalactite does not separate clearly. Darken the background rock to a value darker than the lightest stalactite side.

Reason: Contrast between the object and its background is needed for the shape to read. If the background matches the lightest side, the edge disappears. Darkening the background restores separation while keeping the light direction consistent.

Check: Compare the background value to the lightest stalactite value. The background should be visibly darker.

Cavern Drawing: Rock Arch, Stalactites, and Depth Layering

Source rubric / reflection

- [ ] The drawing frame is a clear rectangle or defined boundary.
- [ ] Three depth layers are distinguishable by size, overlap, or contrast.
- [ ] A rock arch is present with visible thickness and sits across at least two depth layers.
- [ ] Five to eight stalactites hang from the arch or ceiling with a consistent taper.
- [ ] Shading uses one light direction and three value steps consistently.
- [ ] The background rock is darker than the lightest stalactite side.
- [ ] Construction lines are erased or integrated cleanly.

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