Pencil Pine Tree Drawing: Tiered Branches and Needle Strokes

Original tasks 1, 2, 3, 4 / complete keys

Task 1

A pine tree has a 16 cm trunk divided into four equal tiers. The lowest tier extends 5 cm each side. Each higher tier is 1 cm shorter per side. What is the total width of the second tier from the bottom?

Answer: 8 cm.

Reason: Second tier per side is 5 - 1 = 4 cm. Total width is 4 + 4 = 8 cm.

Check: Add the two per-side lengths: 4 cm + 4 cm = 8 cm.

Task 2

You plan needle strokes 1 cm long on lower branches and 0.6 cm long on upper branches. If a lower branch has 12 stroke groups and each group uses 3 strokes, how many lower-branch strokes are drawn?

Answer: 36 strokes.

Reason: 12 groups times 3 strokes per group equals 36 strokes.

Check: Multiply groups by strokes per group: 12 x 3 = 36.

Task 3

A cone is drawn as an oval 2 cm tall and 1 cm wide. If you place three cones per tier on a four-tier tree, how many cones are drawn in total?

Answer: 12 cones.

Reason: Three cones per tier times four tiers equals 12 cones.

Check: Multiply cones per tier by number of tiers: 3 x 4 = 12.

Task 4

A branch line droops 1 cm over a 6 cm horizontal run. If you shorten the horizontal run to 3 cm while keeping the same droop ratio, what is the new droop in centimetres?

Answer: 0.5 cm.

Reason: The ratio is 1 cm droop per 6 cm run. Half the run gives half the droop: 3 cm run gives 0.5 cm droop.

Check: Divide the run by 6 and multiply by 1 cm: 3 / 6 x 1 = 0.5 cm.

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Source rubric / reflection

- [ ] Trunk is vertical and tier heights are clearly marked.
- [ ] Lower tiers are wider than upper tiers, with left and right lengths similar.
- [ ] Needle strokes follow the defined convention: start at branch line, travel outward, taper at tip.
- [ ] Stroke direction is consistent along each branch and does not cross the trunk.
- [ ] Cones touch a branch or trunk line and include simple scale marks.
- [ ] Contrast is controlled: trunk edges darker, needle strokes lighter.
- [ ] Valid alternatives are accepted if direction, spacing, and attachment are clear.

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