Draw Feathers with Layered Vane and Pencil-Stroke Construction

Original tasks 1, 2 / complete keys

Task 1

On a blank feather outline 10 cm long, mark a tapered shaft from 2 mm at the base to 1 mm at the tip. Draw three overlapping vane bands on the left side only, each 2 cm long along the shaft, with a 0.5 cm overlap between consecutive bands. Describe the stroke direction you use.

Answer: A tapered shaft with three left-side bands, each 2 cm long, overlapping by 0.5 cm, and strokes angled outward from the shaft toward the tip.

Reason: The shaft taper is set by the two widths. Three bands of 2 cm cover 6 cm along the shaft, which fits within the 10 cm outline. Overlaps of 0.5 cm mean each new band starts 1.5 cm after the previous start. Stroke direction follows the barb convention: outward and toward the tip.

Check: Measure the shaft widths at base and tip, confirm three bands on the left, check each band length is about 2 cm, and verify strokes angle outward and toward the tip.

Task 2

A feather has four vane bands on the right side, each 3 cm long along the shaft, with 1 cm overlaps. The shaft is 14 cm long. Do the four bands fit within the shaft length if the first band starts at the base? Show the arithmetic.

Answer: Yes, they fit. The covered length is 3 + 3 + 3 + 3 minus three overlaps of 1 cm, which equals 9 cm, less than 14 cm.

Reason: Four bands of 3 cm total 12 cm. Three overlaps of 1 cm remove 3 cm, leaving 9 cm of covered shaft length. Since 9 cm is less than 14 cm, the bands fit with room to spare.

Check: Add the band lengths, subtract the overlaps, and compare the result with the shaft length. Confirm the number of overlaps is one fewer than the number of bands.

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Original tasks 3, 4 / complete keys

Task 3

You draw a feather with a 1.5 mm shaft at the base and a 0.5 mm shaft at the tip. You then add five pencil strokes per band, with four bands. If each stroke is 1 cm long, what total stroke length do you draw? State the unit.

Answer: 20 cm total stroke length.

Reason: Five strokes per band times four bands equals 20 strokes. Each stroke is 1 cm, so 20 strokes times 1 cm equals 20 cm. The shaft widths are separate measurements and do not affect this count.

Check: Multiply strokes per band by number of bands, then multiply by stroke length. Keep units consistent in centimeters.

Task 4

A practice feather is 8 cm long. You plan three bands per side, each 2 cm long along the shaft, with 0.5 cm overlaps. Calculate the covered length per side and state whether the bands fit within the 8 cm shaft.

Answer: Covered length per side is 5 cm, so the bands fit within the 8 cm shaft.

Reason: Three bands of 2 cm total 6 cm. Two overlaps of 0.5 cm remove 1 cm, leaving 5 cm covered per side. Since 5 cm is less than 8 cm, the bands fit.

Check: Add band lengths, subtract overlaps (one fewer than bands), and compare with shaft length. Check that both sides use the same arithmetic if symmetrical.

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Source rubric / reflection

- [ ] Shaft is present, tapered from base to tip, and reads as the center of the feather.
- [ ] Vane shows at least three overlapping layers built from base toward tip.
- [ ] Pencil strokes angle outward from the shaft and toward the tip within each band.
- [ ] Layers remain distinguishable; pressure or stroke density may vary but direction stays consistent.
- [ ] Outer boundary is controlled without outlining every barb; sparse stray strokes are acceptable.
- [ ] Valid alternatives are accepted: symmetry or asymmetry, lighter or darker tip bands, and varied stroke length, provided layering and direction read clearly.

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