Draw a Cylindrical Can with Contour and Label

Original tasks 1, 2, 3 / complete keys

Task 1

A can is 10 cm tall with a top ellipse 6 cm wide and a minor axis of 1.5 cm. The label band is 3 cm tall and centered on the can. State the band start and end heights from the top.

Answer: The band starts 3.5 cm below the top and ends 6.5 cm below the top.

Reason: The can is 10 cm tall and the band is 3 cm tall, so the remaining space is 7 cm. Centering means 3.5 cm above and 3.5 cm below the band. The band starts at 3.5 cm and ends at 3.5 + 3 = 6.5 cm from the top.

Check: Add the three parts: 3.5 cm above + 3 cm band + 3.5 cm below = 10 cm, which matches the can height.

Task 2

A drawing shows a top ellipse 7 cm wide and a bottom ellipse 9 cm wide. The contour lines are both 11 cm long. Name the error(s) present and give one fix for each.

Answer: There is one error: the top and bottom ellipses have different widths (7 cm and 9 cm). Fix: use the same major axis for both ellipses, for example 8 cm, and measure equal distances from the center line to each edge. The equal 11 cm contour lines are correct and need no fix.

Reason: A cylinder has a constant width, so the top and bottom ellipses must share the same major axis. Equal contour lines are correct for an upright can, so the only error is the mismatch between the ellipse widths.

Check: Measure the left and right distances from the center line at the top and at the bottom; all four distances should be equal, and the two contour lines should remain equal and parallel.

Task 3

A label band is drawn as a rectangle 5 cm wide and 2 cm tall on a can whose contour is 6 cm wide. The band touches both contour lines. Is the band placed correctly? Explain.

Answer: No. The band is 5 cm wide on a 6 cm can, so it leaves only 0.5 cm on each side, and its edges are straight rather than curved. The band should curve with the cylinder and should not be a flat rectangle.

Reason: The band width is close to the full can width, which is possible, but the straight edges make it look flat. The band edges must follow the cylinder curve, and the text must stay inside the contour.

Check: Check that the band edges curve in the same direction as the ellipses and that the band stays inside the 6 cm contour with equal margins on both sides.

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Original tasks 4 / complete keys

Task 4

A can drawing has a vertical center line, a top ellipse 8 cm wide, a bottom ellipse 8 cm wide, and contour lines of 12 cm and 10 cm. List the checks that fail and state one correction.

Answer: The contour check fails because the two contour lines are not equal (12 cm versus 10 cm). The ellipse width check passes because both ellipses are 8 cm wide. Correction: make both contour lines the same length, for example both 12 cm, and keep them parallel to the center line.

Reason: A cylinder has a constant height on both sides, so the left and right contour lines must be equal. The ellipse widths match, so the width check passes.

Check: Measure both contour lines with a ruler; they should be the same length and parallel to the center line, and re-measure the ellipse widths to confirm they still match.

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Source rubric / reflection

- [ ] Top and bottom ellipses have equal width and a consistent minor axis.
- [ ] The bottom ellipse shows only the back curve, not the front half.
- [ ] Left and right contour lines are parallel and equal in length.
- [ ] The label band is placed between the top and bottom marks and stays inside the contour.
- [ ] The band edges curve with the cylinder rather than forming a flat rectangle.
- [ ] Label text is legible, evenly spaced, and inside the band.
- [ ] Valid alternatives are accepted: different minor axis values, different band heights, and different letter styles, as long as the checks above hold.

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