How to Draw a Digital Weighing Scale: Proportions, Display, and Platform

Original tasks 1, 2, 3 / complete keys

Task 1

On a 15 cm by 10 cm page, draw a scale body 9 cm wide and 3 cm tall centered horizontally. Mark a display panel 4 cm wide and 1.5 cm tall centered on the body. State the left and right margins of the panel.

Answer: The body is centered on a 15 cm page, so each side margin is (15 - 9) / 2 = 3 cm. The panel is centered on the 9 cm body, so each panel side margin is (9 - 4) / 2 = 2.5 cm.

Reason: Subtract the body width from the page width and divide by two for the body margins. Then subtract the panel width from the body width and divide by two for the panel margins.

Check: Measure from the page edge to the body edge on both sides; both should be 3 cm. Measure from the body edge to the panel edge on both sides; both should be 2.5 cm.

Task 2

Draw a platform ellipse 8 cm wide and 2.5 cm tall centered on a vertical centerline. After drawing, measure the left radius and right radius. What should each be, and what tolerance is acceptable?

Answer: Each radius should be 8 / 2 = 4 cm. Accept if the two radii differ by no more than 2 mm.

Reason: The major axis is the full width, so each side radius is half the width. Symmetry is checked by comparing the two radii.

Check: Use a ruler from the center mark to the left edge and to the right edge; both readings should be 4 cm within 2 mm.

Task 3

Inside a display panel 6 cm wide and 2 cm tall, plan four digit spaces with equal gaps. If each digit space is 1 cm wide and the gaps are equal, what is each gap?

Answer: Total digit width is 4 × 1 = 4 cm. Remaining width is 6 - 4 = 2 cm. With three gaps between four digits, each gap is 2 / 3 ≈ 0.67 cm.

Reason: Subtract the total digit width from the panel width, then divide by the number of gaps (one fewer than the number of digits).

Check: Add the four digit widths and three gaps: 4 + 3 × 0.67 = 6.01 cm, which is within 1 mm of 6 cm.

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Original tasks 4 / complete keys

Task 4

A scale body is 10 cm wide and 3.5 cm tall. A platform ellipse is 8 cm wide and 2 cm tall, centered 0.8 cm above the body top. What is the total height from the body bottom to the top of the ellipse?

Answer: The ellipse extends half its height above its center: 2 / 2 = 1 cm. The center is 0.8 cm above the body top, so the ellipse top is 0.8 + 1 = 1.8 cm above the body top. Total height from body bottom to ellipse top is 3.5 + 1.8 = 5.3 cm.

Reason: Add the body height to the distance from the body top to the ellipse center, then add half the ellipse height.

Check: Measure the body height, the gap to the ellipse center, and half the ellipse height separately; sum them and compare to 5.3 cm within 2 mm.

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Source rubric / reflection

- [ ] Body is a clear rectangle with opposite sides equal within 2 mm.
- [ ] Display panel is centered with visible margins on all sides.
- [ ] Digits or lettering use a defined baseline and midline; style may vary but spacing is even.
- [ ] Platform is an ellipse with left and right radii matching within 2 mm.
- [ ] Construction lines are light and final outlines are clear.
- [ ] All text fits inside its area without crossing borders.

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