Draw a Milk Carton and Glass with Contour Construction

Original tasks 1, 2, 3 / complete keys

Task 1

A carton is 12 cm high, 7 cm wide, and 5 cm deep. Draw it at full scale with a gable ridge. State the length of the front top edge and the side top edge.

Answer: Front top edge is 7 cm; side top edge is 5 cm. The front rectangle is 12 by 7 cm, and the side face is 5 cm deep.

Reason: The front face uses height and width. The side face uses depth. The top edges follow those measured lengths.

Check: Measure the drawn front top edge and side top edge with a ruler; they should read 7 cm and 5 cm.

Task 2

A glass has a 6 cm rim diameter and is 9 cm tall. Draw the rim ellipse and base ellipse at half scale. The base diameter is 4 cm. State the long axis of each ellipse on your page.

Answer: Rim long axis is 3 cm; base long axis is 2 cm. The glass height on the page is 4.5 cm.

Reason: Half scale divides every measurement by two. The ellipse long axis equals the scaled diameter.

Check: Measure the widest part of each ellipse; they should read 3 cm and 2 cm.

Task 3

Draw a carton 8 cm high, 5 cm wide, and 3 cm deep with a glass 6 cm high and 4 cm rim diameter in front of it. The glass overlaps the carton's lower left corner. Describe where the carton contour stops.

Answer: The carton contour stops at the glass rim and side lines. The glass contour continues unbroken because the glass is in front.

Reason: Overlap rule: the front object's contour is continuous, and the back object's contour ends at the front object's edge.

Check: Trace the glass outline with your finger; it should be unbroken. The carton line should touch but not cross it.

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Original tasks 4 / complete keys

Task 4

A carton is 10 cm high, 6 cm wide, and 4 cm deep. A glass is 7 cm high with a 5 cm rim diameter. At full scale, what is the total width of the drawing if the glass is placed 2 cm to the right of the carton?

Answer: Total width is 6 + 2 + 5 = 13 cm.

Reason: Add the carton width, the gap, and the glass rim diameter. All units are centimeters.

Check: Measure the widest horizontal extent of the drawing; it should read 13 cm.

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Source rubric / reflection

- [ ] Carton front face matches measured height and width at the chosen scale.
- [ ] Carton side face uses measured depth and opposite edges are equal.
- [ ] Gable has a ridge and at least one fold line.
- [ ] Glass rim is an ellipse with long axis equal to measured rim diameter.
- [ ] Glass base ellipse is smaller than the rim ellipse.
- [ ] Overlap is correct: front object's contour is unbroken.
- [ ] Line weight marks contact points and fold lines.
- [ ] Shading on the glass curves with the surface.
- [ ] Valid alternatives are accepted: different letter styles, slightly different ellipse flatness, and freehand contour variation that preserves proportions.

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