Lesson Maker Pro

Design a Display Box

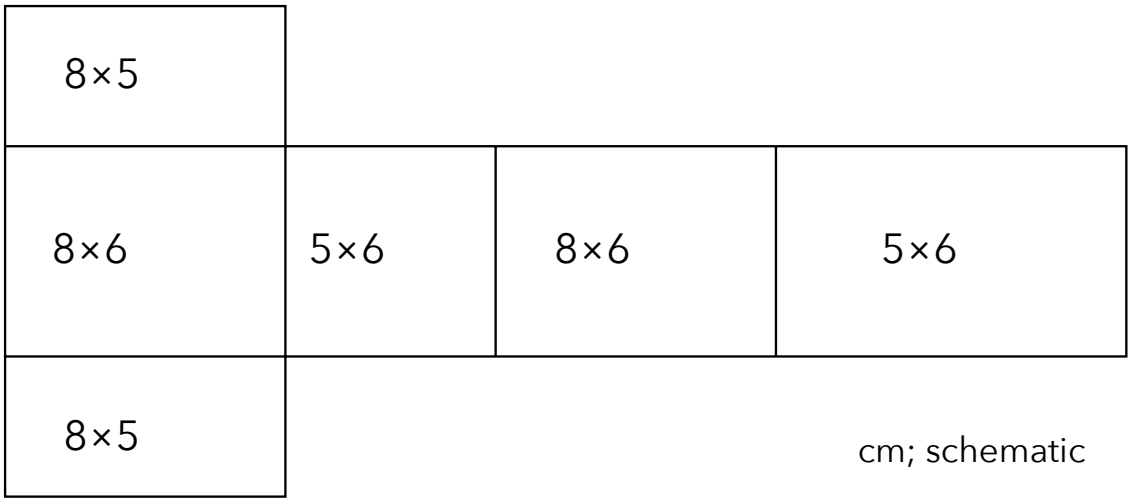
Distinguish angle measure, area, surface area and volume.

CCSS.Math.Content.7.G.B Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

NAME _____ **DATE** _____

Plan the closed box

A display box is a rectangular prism 8 cm long,5 cm wide and 6 cm high. The diagram is its net; dimensions are labels, not measurements of the drawing.



cm; schematic

1. Identify all six faces. Find the area of the base, the lateral area excluding both 8-by 5 bases, and the total surface area. Explain which faces you counted.

2. Find the volume. Explain why surface area uses square units and volume uses cubic units.

Add a sign and pack the box

3. A triangular sign has base 8 cm and perpendicular height 3 cm. Find its area. A separate right-triangle sign has angles 35°,90°and x°. Sketch it and find x.

4. A 2-by 3-by 4 cm rectangular package fits inside the box. Find the empty volume. Does subtracting volumes alone prove that any package will physically fit? Explain.

5. For comparison, calculate the volume of a 7-by 3-by 4 cm prism. A larger 12-by 10-by 9 cm bin contains a 6-by 4-by 6 cm package. Find its empty volume.

Teacher Key

1:base 40 cm²;lateral 2(8×6)+2(5×6)=156 cm²;total 156+80=236 cm².2:8×5×6=240 cm³; area covers faces,volume counts three-dimensional space.3:triangle area½×8×3=12 cm²; x=180−35−90=55°.

4:package volume 24 cm³;empty 216 cm³. This package can fit with its 2,3,4 dimensions along 5,6,8 respectively. Volume comparison alone does not guarantee geometric fit for an arbitrary package.5:84 cm³; larger bin 1080 minus package 144=936 cm³. Net labels determine dimensions even though the schematic is not to scale.