

Measure It Up

Find area, surface area, and volume in real situations.

GRADE 6 • 6.G.A

CCSS.Math.Content.6.G.A "Solve real-world and mathematical problems involving area, surface area, and volume."

NAME _____

DATE _____

CHOOSE THE RIGHT MEASURE

Area measures the space inside a flat shape. Use base $\times$ height for a parallelogram, base $\times$ height $\div 2$ for a triangle, and length $\times$ width $\times$ height for volume. For a rectangular prism's surface area, add the areas of its three different face pairs, then double the sum.

WORKED EXAMPLE

Find the surface area of a rectangular prism that is 11 units long, 7 units wide, and 5 units high.

1. Find the three face areas: $11 \times 7 = 77$, $11 \times 5 = 55$, and $7 \times 5 = 35$.
2. Add the face areas: $77 + 55 + 35 = 167$.
3. Double the sum for matching face pairs: $2 \times 167 = 334$.

Answer: 334 square units

PRACTICE 6 problems

- 1** Find the area of a rectangle that is 8 cm long and 6 cm wide.

ANSWER _____

- 2** Find the area of a parallelogram with a base of 9 m and a height of 4 m.

ANSWER _____

- 3** Find the area of a triangle with a base of 12 in. and a height of 10 in.

ANSWER _____

- 4** Find the volume of a rectangular prism that is 4 units long, 2 units wide, and 6 units high.

ANSWER _____

- 5** Find the surface area of a rectangular prism that is 8 cm long, 4 cm wide, and 2 cm high.

ANSWER _____

- 6** Find the surface area of a cube with side length 9 cm.

ANSWER _____

APPLY IT Show your work

- 1** An esports club is making a rectangular banner that is 14 ft long and 9 ft wide. They will cover the entire front with fabric. How many square feet of fabric are needed?

WORK SPACE

ANSWER _____

- 2** At a robotics club, a rectangular battery case is 12 cm long, 8 cm wide, and 6 cm high. Material covers all six outside faces. What is the surface area of the case?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A rectangular prism has a volume of 216 cubic units. Its length is 9 units and its width is 6 units. Find its height, then find its surface area.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Find the area of a rectangle that is 8 cm long and 6 cm wide.	48 cm²
2	Find the area of a parallelogram with a base of 9 m and a height of 4 m.	36 m²
3	Find the area of a triangle with a base of 12 in. and a height of 10 in.	60 in.²
4	Find the volume of a rectangular prism that is 4 units long, 2 units wide, and 6 units high.	48 cubic units
5	Find the surface area of a rectangular prism that is 8 cm long, 4 cm wide, and 2 cm high.	112 cm²
6	Find the surface area of a cube with side length 9 cm.	486 cm²

PART 2 • APPLY IT

- 126 ft²** Multiply the length by the width: $14 \times 9 = 126$. The banner needs 126 square feet of fabric.
- 432 cm²** Find the three face areas, $12 \times 8 = 96$, $12 \times 6 = 72$, and $8 \times 6 = 48$. Add them and double: $2 \times (96 + 72 + 48) = 432$.

CHALLENGE

Height: 4 units. Surface area: 228 square units.

Accept equivalent unit wording, such as square centimeters for cm² and cubic units for units³. For the challenge, students should identify the height as 4 before calculating the surface area.