

Space and Surface

Find area, surface area, and volume in useful shapes.

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 _____

You will need: Pencil; Ruler

MEASURE THE SPACE

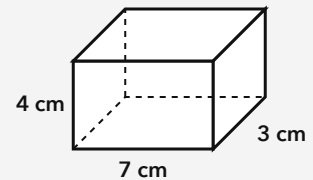
Area measures the space inside a flat shape. Rectangle area = $l \times w$, triangle area = $\frac{1}{2} \times b \times h$, and parallelogram area = $b \times h$. Volume of a rectangular prism = $l \times w \times h$, and surface area is the total area of all its outside faces.

WORKED EXAMPLE

Find the volume of the rectangular prism shown.

1. Use $V = l \times w \times h$.
2. $V = 7 \times 3 \times 4$.
3. $V = 84 \text{ cm}^3$.

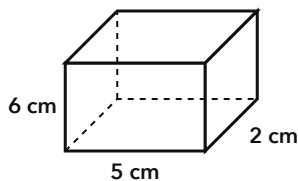
Answer: 84 cm^3



PRACTICE 6 problems

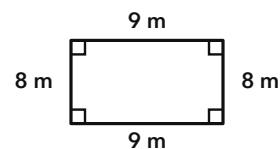
Show your calculation or reasoning. Include units when needed.

- 1** Find the volume of the rectangular prism shown.



ANSWER _____

- 2** Find the area of the rectangle shown.



ANSWER _____

- 3** A triangle has a base of 13 in and a perpendicular height of 10 in. Find its area.

ANSWER _____

- 4** A rectangular prism has length 11 ft, width 2 ft, and height 5 ft. Find its surface area.

ANSWER _____

- 5** A parallelogram has a base of 14 cm and a perpendicular height of 8 cm. Find its area.

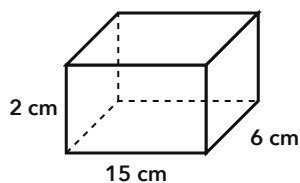
ANSWER _____

- 6** A cube has side length 9 mm. Find its surface area.

ANSWER _____

APPLY IT Show your work

- 1** A student designs the rectangular storage box shown for game cards. What volume of space is inside the box?

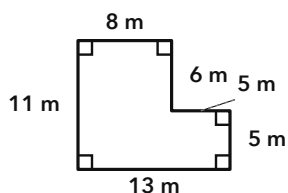


- 2** A club ships supplies in a rectangular box that is 10 in long, 5 in wide, and 2 in high. How many square inches of cardboard cover all six outside faces, ignoring overlap?

CHALLENGE

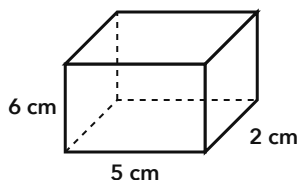
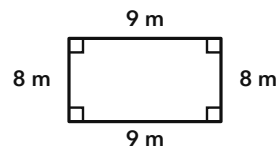
One step up

The L-shaped floor area shown is being covered with rubber tiles. Find its area. Explain how you split the shape or subtract an unneeded part.

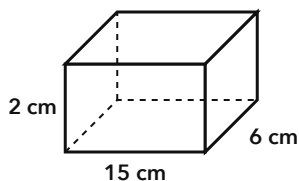


PRACTICE 3**65 in²****PRACTICE 4****174 ft²****PRACTICE 5****112 cm²****PRACTICE 6****486 mm²****APPLY IT 2**

160 in² Find the areas of the three face pairs: 10×5 , 10×2 , and 5×2 . Add them and multiply by 2: $2 \times (50 + 20 + 10) = 160$.

PRACTICE 1**60 cm³****PRACTICE 2****72 m²****APPLY IT 1**

180 cm³ Multiply the three dimensions: $15 \times 6 \times 2 = 180$.

**CHALLENGE****113 m²; $13 \times 11 - 5 \times 6 = 113$.**

Accept equivalent unit notation, such as cm³ or cm³. For the challenge, accept any correct decomposition or subtraction method that gives 113 m².

