LESSON MAKER PRO

Volume Builder Lab

Find the space inside prisms and cylinders.

GRADE 7 · 7.GSR.5.8

7.GSR.5.8 "Explore volume as a measurable attribute of cylinders and right prisms. Find the volume of these geometric figures using concrete problems."

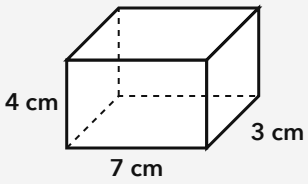
NAME _____ DATE _____

VOLUME RULES

For a right prism, multiply the area of its base by its height. For a cylinder, multiply π times the radius squared times the height.

WORKED EXAMPLE

Find the volume of the right rectangular prism shown.

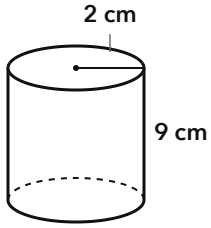


1. Multiply the three dimensions.
2. $V = 7 \times 3 \times 4$.
3. $V = 84$ cm^3.

Answer: 84 cm^3

PRACTICE 6 problems

1 Find the volume of the cylinder shown, with radius 2 cm and height 9 cm.

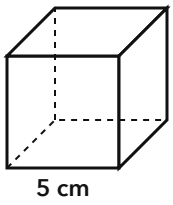


ANSWER _____

2 A right rectangular prism is 6 cm long, 8 cm wide, and 10 cm high. Find its volume.

ANSWER _____

3 Find the volume of the cube shown. Each side is 5 cm long.



ANSWER _____

4 A cylinder has a diameter of 10 cm and a height of 8 cm. Find its volume.

ANSWER _____

5 A right triangular prism has a triangular base with a base of 14 cm and a triangle height of 6 cm. The prism is 11 cm long. Find its volume.

ANSWER _____

6 A shipping box is a right rectangular prism that is 11 cm long, 6 cm wide, and 8 cm high. Find its volume.

ANSWER _____

APPLY IT Show your work

1 The inside of a reusable water bottle is shaped like a cylinder with a radius of 5 cm and a height of 12 cm. What is the bottle's volume?

WORK SPACE

ANSWER _____

2 A gaming club stores tournament controllers in a rectangular display case that is 18 cm long, 10 cm wide, and 6 cm high. What is the volume of the case?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A right rectangular prism has a base that is 15 cm by 8 cm. Its volume is the same as a cylinder with a radius of 5 cm and a height of 12 cm. Find the prism's height, x, and explain with equations.

WORK SPACE AND ANSWER

ANSWER KEY

Volume Builder Lab

GRADE 7 · 7.GSR.5.8

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find the volume of the cylinder shown, with radius 2 cm and height 9 cm.	**36π cm^3**
2	A right rectangular prism is 6 cm long, 8 cm wide, and 10 cm high. Find its volume.	**480 cm^3**
3	Find the volume of the cube shown. Each side is 5 cm long.	**125 cm^3**
4	A cylinder has a diameter of 10 cm and a height of 8 cm. Find its volume.	**200π cm^3**
5	A right triangular prism has a triangular base with a base of 14 cm and a triangle height of 6 cm. The prism is 11 cm long. Find its volume.	**462 cm^3**
6	A shipping box is a right rectangular prism that is 11 cm long, 6 cm wide, and 8 cm high. Find its volume.	**528 cm^3**

PART 2 · APPLY IT

1. **300π cm^3** Use the cylinder volume formula: $\pi \times 5^2 \times 12 = 300\pi$.
2. **1,080 cm^3** Multiply the three dimensions: $18 \times 10 \times 6 = 1{,}080$.

CHALLENGE

Cylinder volume = $\pi \times 5^2 \times 12 = 300\pi$ cm^3. Prism volume = $15 \times 8 \times x = 120x$, so $120x = 300\pi$ and $x = 5\pi/2$ cm.

Accept equivalent exact forms using π. For the challenge, accept x = 2.5π cm as equivalent to 5π/2 cm.