

Base Times Height

Find prism volume from the base up.

GRADE 5 • 5.GSR.8.4

5.GSR.8.4 "Discover and explain how the volume of a right rectangular prism can be found by multiplying the area of the base times the height to solve authentic, mathematical problems."

NAME _____

DATE _____

BUILD VOLUME IN TWO STEPS

A right rectangular prism has rectangle bases. Find the area of one base, then multiply that area by the height to find the volume.

WORKED EXAMPLE

Find the volume of a right rectangular prism with a base that is 4 cm long and 7 cm wide and a height of 6 cm.

1. Find the base area: $4 \text{ cm} \times 7 \text{ cm} = 28$ square cm.
2. Multiply the base area by the height: 28 square cm $\times 6 \text{ cm} = 168$ cubic cm.

Answer: 168 cubic cm

PRACTICE 6 problems

- 1** A right rectangular prism has a base area of 15 square cm and a height of 8 cm. What is its volume?

ANSWER _____

- 2** A right rectangular prism has a base that is 3 cm by 5 cm and a height of 9 cm. Find its volume.

ANSWER _____

- 3** A right rectangular prism has a base that is 10 m by 2 m and a height of 12 m. Find its volume.

ANSWER _____

- 4** A right rectangular prism has a base area of 25 square m and a height of 3 m. What is its volume?

ANSWER _____

- 5** A right rectangular prism has a base that is 8 mm by 11 mm and a height of 5 mm. Find its volume.

ANSWER _____

- 6** A right rectangular prism has a base area of 18 square in. and a height of 10 in. What is its volume?

ANSWER _____

APPLY IT Show your work

- 1** Jay is making a rectangular box to store trading cards. The inside base is 12 cm long and 5 cm wide. The box is 8 cm high. What is the volume of the box?

WORK SPACE

ANSWER _____

- 2** A class has a small rectangular tank for observing tadpoles. The tank base is 9 cm long and 3 cm wide, and the tank is 2 cm high. What is the volume of the tank?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Two right rectangular prize bins are being compared. Bin A has a base area of 24 square in. and a height of 5 in. Bin B has a base area of 15 square in. and a height of 8 in. Which bin has the greater volume, or are the volumes equal? Explain using base area times height.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A right rectangular prism has a base area of 15 square cm and a height of 8 cm. What is its volume?	120 cubic cm
2	A right rectangular prism has a base that is 3 cm by 5 cm and a height of 9 cm. Find its volume.	135 cubic cm
3	A right rectangular prism has a base that is 10 m by 2 m and a height of 12 m. Find its volume.	240 cubic m
4	A right rectangular prism has a base area of 25 square m and a height of 3 m. What is its volume?	75 cubic m
5	A right rectangular prism has a base that is 8 mm by 11 mm and a height of 5 mm. Find its volume.	440 cubic mm
6	A right rectangular prism has a base area of 18 square in. and a height of 10 in. What is its volume?	180 cubic in.

PART 2 • APPLY IT

- 480 cubic cm** The base area is $12 \times 5 = 60$ square cm. Multiply 60 by the height of 8 cm to get 480 cubic cm.
- 54 cubic cm** The base area is $9 \times 3 = 27$ square cm. Multiply 27 by 2 cm to get 54 cubic cm.

CHALLENGE

The volumes are equal. Bin A is $24 \times 5 = 120$ cubic in., and Bin B is $15 \times 8 = 120$ cubic in.

Accept correct products with equivalent cubic-unit wording. For the challenge, accept any clear explanation that both base-area-times-height products equal 120 cubic inches.