LESSON MAKER PRO

Cube by Cube

Find prism volumes with fractions.

GRADE 6 · MT.6.G.2

MT.6.G.2 "Find the volume of a right rectangular prism with fractional edge lengths by filling it with unit cubes of the appropriate unit fraction edge lengths and connect and apply the formulas V = l · w · h and V = B · h to find volumes of right..."

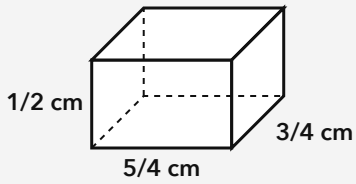
NAME _____ DATE _____

COUNT OR MULTIPLY

A right rectangular prism can be filled with small cubes that all have the same edge length. Multiply the number of cubes by the volume of one cube, or use V = l · w · h. You can also find the base area first and use V = B · h.

WORKED EXAMPLE

How many cubes with 1/4 cm edges fill the prism shown? Find its volume.

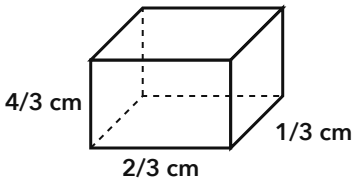


1. Count cubes: 5 · 3 · 2 = 30.
2. Find one cube's volume: 1/4 · 1/4 · 1/4 = 1/64 cm^3.
3. Find the prism's volume: 30 · 1/64 = 15/32 cm^3.
4. Check: V = 5/4 · 3/4 · 1/2 = 15/32 cm^3.

Answer: 30 cubes; 15/32 cm^3

PRACTICE 6 problems

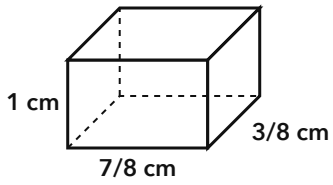
1 How many cubes with 1/3 cm edges fill the prism shown? What is its volume?



ANSWER _____

_____

2 Find the volume of the prism shown.



ANSWER _____

3 A prism is 4/5 cm long, 2/5 cm wide, and 3/5 cm high. Find its volume.

ANSWER _____

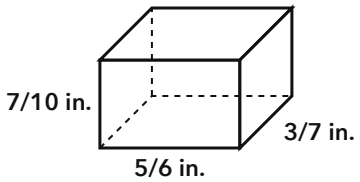
4 A prism is 9/10 m long, 2/3 m wide, and 1 m high. Find its volume.

ANSWER _____

5 A prism has a base area of 8/15 cm^2 and a height of 9/4 cm. Use $V = B \cdot h$ to find its volume.

ANSWER _____

6 For the prism shown, find the base area using its length and width. Then find its volume.



ANSWER _____

_____

APPLY IT Show your work

1 A school is building a rectangular sand pit for games. It will be 7/2 m long, 4/3 m wide, and 3/5 m deep. How many cubic meters of sand will fill it?

WORK SPACE

ANSWER _____

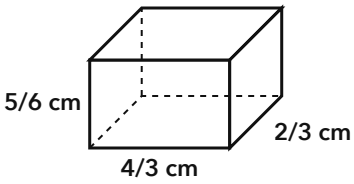
2 A clear display box for a small collection is 8/3 in. long, 9/4 in. wide, and 5/2 in. high. What is its volume?

WORK SPACE

ANSWER _____

CHALLENGE One step up

How many cubes with 1/6 cm edges fill the prism shown? Find its volume, then explain how the cube count agrees with V = l · w · h.



WORK SPACE AND ANSWER

ANSWER KEY # Cube by Cube

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	How many cubes with 1/3 cm edges fill the prism shown? What is its volume?	**8 cubes; 8/27 cm^3**
2	Find the volume of the prism shown.	**21/64 cm^3**
3	A prism is 4/5 cm long, 2/5 cm wide, and 3/5 cm high. Find its volume.	**24/125 cm^3**
4	A prism is 9/10 m long, 2/3 m wide, and 1 m high. Find its volume.	**3/5 m^3**
5	A prism has a base area of 8/15 cm^2 and a height of 9/4 cm. Use V = B · h to find its volume.	**6/5 cm^3**
6	For the prism shown, find the base area using its length and width. Then find its volume.	**Base area: 5/14 $in.^2$; volume: 1/4 $in.^3$**

PART 2 · APPLY IT

1. **14/5 m^3** Multiply the three dimensions: 7/2 · 4/3 · 3/5 = 14/5.
2. **15 $in.^3$** Multiply the three dimensions: 8/3 · 9/4 · 5/2 = 15.

CHALLENGE

160 cubes; 20/27 cm^3. There are 8 · 4 · 5 = 160 cubes, and each has a volume of 1/216 cm^3. So the total is 160/216 = 20/27 cm^3, which also equals 4/3 · 2/3 · 5/6.

Accept equivalent fractions and mixed numbers with correct units. For the challenge, accept either method if the explanation connects the cube count to the volume formula.