LESSON MAKER PRO

Layers of Volume

Count cubes by layer, then multiply.

GRADE 5 · 5.GR.C.5.a

5.GR.C.5.a "Find the volume of a right rectangular prism with whole-number side lengths by filling it with unit cubes in layers and show that the volume is the same as would be found by multiplying the edge lengths..."

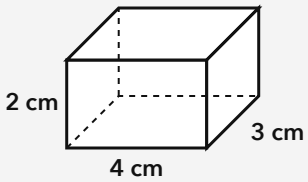
NAME _____ DATE _____

THE BIG IDEA

A rectangular prism can be filled with layers of unit cubes. Multiply the cubes in one layer by the number of layers, or multiply all three edge lengths.

WORKED EXAMPLE

How many 1-cm cubes fill the prism shown?



1. One layer has 4 × 3 = 12 cubes.
2. There are 2 layers, so 12 × 2 = 24 cubes.
3. The edge lengths also give 4 × 3 × 2 = 24.

Answer: 24 cubes

PRACTICE 4 problems

1 A prism has a 5 cm by 6 cm base and is 7 cm tall. Find its volume.

ANSWER _____

2 Each layer has 8 rows of 5 unit cubes. There are 6 layers. How many cubes are in one layer and in the whole prism?

ANSWER _____

3 A prism has edge lengths of 7 cm, 9 cm, and 5 cm. Write a product and find its volume.

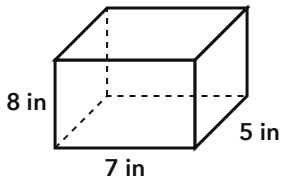
ANSWER _____

4 Each layer has 6 rows of 8 cubes. There are 9 layers. How many cubes fill the prism?

ANSWER _____

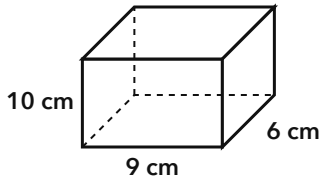
APPLY IT Show your work

1 A video game display case has the dimensions shown. How many 1-inch cubes could fill it?



ANSWER _____

2 A school club builds a block-shaped stage for toy figures. What is its volume?



ANSWER _____

CHALLENGE One step up

A prism has 5 layers. Each layer has 6 rows of 8 cubes. Write two differently grouped products for its volume. Explain what one group counts.

WORK SPACE AND ANSWER

ANSWER KEY

Layers of Volume

GRADE 5 · 5.GR.C.5.a

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A prism has a 5 cm by 6 cm base and is 7 cm tall. Find its volume.	**210 cm^3**
2	Each layer has 8 rows of 5 unit cubes. There are 6 layers. How many cubes are in one layer and in the whole prism?	**40 cubes in one layer; 240 cubes in the prism**
3	A prism has edge lengths of 7 cm, 9 cm, and 5 cm. Write a product and find its volume.	**7 × 9 × 5 = 315 cm^3**
4	Each layer has 6 rows of 8 cubes. There are 9 layers. How many cubes fill the prism?	**432 cubes**

PART 2 · APPLY IT

1. **280 cubes** Each layer holds 7 × 5 = 35 cubes. Eight layers hold 35 × 8 = 280 cubes.
2. **540 cm^3** Multiply the three edge lengths: 9 × 6 × 10 = 540 cm^3.

CHALLENGE

(6 × 8) × 5 = 6 × (8 × 5) = 240 cubes. In the first product, 6 × 8 counts the 48 cubes in one layer.

Accept any correct order of the three factors. For the challenge, accept a correct explanation of either grouped factor.