LESSON MAKER PRO

Cube Space

Find volume by layers, multiplication, and addition.

GRADE 5 · 5.GR.C.5

5.GR.C.5 "Relate volume to the operations of multiplication and addition and solve problems in context. 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..."

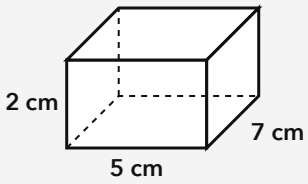
NAME _____ DATE _____

COUNT THE LAYERS

Multiply the length by the width to find how many unit cubes fit in one layer. Then multiply by the height, or number of layers. For a shape made of non-overlapping prisms, find each volume and add.

WORKED EXAMPLE

How many 1-cm cubes fit in the prism shown?



1. One layer: 5 × 7 = 35 cubes.
2. Two layers: 35 × 2 = 70 cubes.

Answer: 70 cm^3

PRACTICE 4 problems

1 A prism is 6 cm long, 4 cm wide, and 3 cm high. Find its volume.

ANSWER _____

2 A prism has a base area of 18 square centimeters and a height of 6 cm. Find its volume.

ANSWER _____

3 Each layer has 8 rows of 3 unit cubes. How many cubes are in 4 layers?

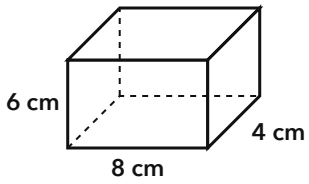
ANSWER _____

4 A prism measures 9 in by 6 in by 3 in. Group the three factors in two ways to find its volume.

ANSWER _____

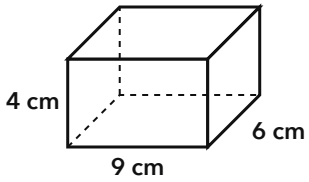
APPLY IT Show your work

1 A game club uses the box shown to store dice. How many 1-cm cubes fit inside?



ANSWER _____

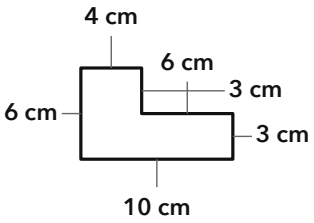
2 A class pet's supply box has the dimensions shown. What is its volume?



ANSWER _____

CHALLENGE One step up

The figure shows the top of a display stand that is 4 cm tall. Split the top into two rectangles. What is the stand's volume?



WORK SPACE AND ANSWER

ANSWER KEY

Cube Space

GRADE 5 · 5.GR.C.5

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	A prism is 6 cm long, 4 cm wide, and 3 cm high. Find its volume.	**72 cm^3**
2	A prism has a base area of 18 square centimeters and a height of 6 cm. Find its volume.	**108 cm^3**
3	Each layer has 8 rows of 3 unit cubes. How many cubes are in 4 layers?	**96 cubes**
4	A prism measures 9 in by 6 in by 3 in. Group the three factors in two ways to find its volume.	**(9 × 6) × 3 = 162 and 9 × (6 × 3) = 162; volume = 162 in^3**

PART 2 · APPLY IT

1. **192 cubes** Each layer holds 8 × 4 = 32 cubes. Six layers hold 32 × 6 = 192 cubes.
2. **216 cm^3** Multiply the three edge lengths: 9 × 6 × 4 = 216 cm^3.

CHALLENGE

168 cm^3; (10 × 3 × 4) + (4 × 3 × 4) = 120 + 48 = 168

Accept either grouping of the three factors in problem 4. For the challenge, accept any split into two non-overlapping rectangular prisms that gives 168 cm^3.