LESSON MAKER PRO

Build the Volume

Use base layers to count unit cubes in rectangular prisms.

GRADE 5 · TEKS 5.6.B

5.6.B "determine the volume of a rectangular prism with whole number side lengths in problems related to the number of layers times the number of unit cubes in the area of the base."

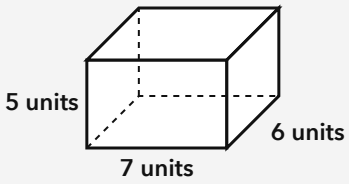
NAME _____ DATE _____

LAYERS MAKE VOLUME

First, multiply the length and width to find how many unit cubes fit in one base layer. Then multiply the number of cubes in one layer by the number of layers, or height, to find volume.

WORKED EXAMPLE

Find the volume of the rectangular prism shown.

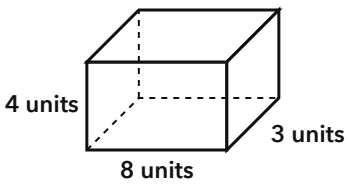


1. One base layer has 7 x 6 = 42 unit cubes.
2. The prism has 5 layers.
3. Multiply 42 x 5 = 210.

Answer: 210 cubic units

PRACTICE 6 problems

1 The rectangular prism shown is made of unit cubes. Find its volume.



ANSWER _____

2 A rectangular prism is 9 units long, 2 units wide, and 4 units high. Find its volume.

ANSWER _____

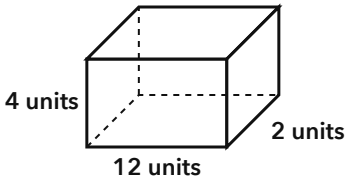
3 A prism has a base that is 3 units by 8 units. It has 2 equal layers. Find its volume.

ANSWER _____

4 A rectangular prism has 10 unit cubes in each row, 3 rows in each layer, and 3 layers. Find its volume.

ANSWER _____

5 Find the volume of the rectangular prism shown.



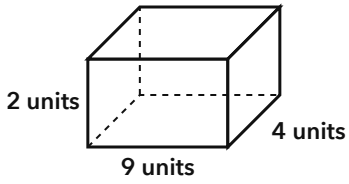
ANSWER _____

6 One layer of a rectangular prism has an area of 24 square units. The prism has 3 equal layers. Find its volume.

ANSWER _____

APPLY IT Show your work

1 A game designer builds the storage box shown from 1-cubic-unit blocks. How many blocks fill the box?



ANSWER _____

2 A snack shop stacks cube-shaped treats in a rectangular display. Each layer has 11 treats in a row and 2 rows. There are 4 equal layers. How many treats are in the display?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A rectangular prism has a base that measures 12 units by 3 units. It holds 144 unit cubes. How many equal layers does it have? Explain your reasoning.

WORK SPACE AND ANSWER

ANSWER KEY

Build the Volume

GRADE 5 · TEKS 5.6.B

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	The rectangular prism shown is made of unit cubes. Find its volume.	**96 cubic units**
2	A rectangular prism is 9 units long, 2 units wide, and 4 units high. Find its volume.	**72 cubic units**
3	A prism has a base that is 3 units by 8 units. It has 2 equal layers. Find its volume.	**48 cubic units**
4	A rectangular prism has 10 unit cubes in each row, 3 rows in each layer, and 3 layers. Find its volume.	**90 cubic units**
5	Find the volume of the rectangular prism shown.	**96 cubic units**
6	One layer of a rectangular prism has an area of 24 square units. The prism has 3 equal layers. Find its volume.	**72 cubic units**

PART 2 · APPLY IT

1. **72 blocks** Multiply the base area, 9 x 4 = 36, by 2 layers. The volume is 72 cubic units, so 72 blocks fill the box.
2. **88 treats** One layer has 11 x 2 = 22 treats. Multiply 22 x 4 to get 88 treats.

CHALLENGE

4 layers, because one base layer has 12 x 3 = 36 unit cubes and 144 ÷ 36 = 4.

Accept correct numerical answers with or without the words cubic units when the question asks for volume. For the challenge, accept any clear explanation that finds 36 cubes in one layer and divides 144 by 36.