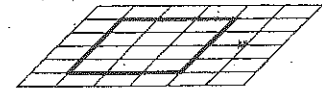


12.3 Volume of Rectangular Prisms

Essential Question How can you find the volume of a rectangular prism?

Connect The base of a rectangular prism is a rectangle. You know that area is measured in square units and that the area of a rectangle can be found by multiplying the length and the width.



The area of the base

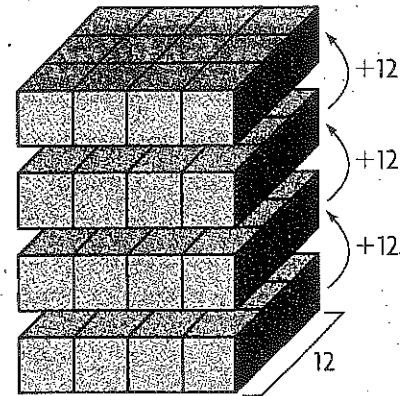
Volume is measured in cubic units, such as cubic feet or cu ft. When you build a prism and add each layer of cubes, you are adding a third dimension, height.

is _____ sq units.

Unlock the Problem



Sid built the rectangular prism shown at the right, using 1-inch cubes. The prism has a base that is a rectangle and has a height of 4 cubes. What is the volume of the rectangular prism that Sid built?



You can find the volume of a prism in cubic units by multiplying the number of square units in the base shape by the number of layers, or its height.

Each layer of Sid's rectangular prism is composed of _____ inch cubes.

Height (in layers)	1	2	3	4
Volume (in cubic inches)	12	24		

Multiply the height by _____.

1. How does the volume change as each layer is added?

2. What does the number you multiply the height by represent?

So, the volume of Sid's rectangular prism is _____ cu in..

Name _____

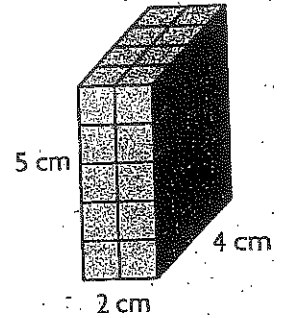
Volume: Part 1

Find the volume.

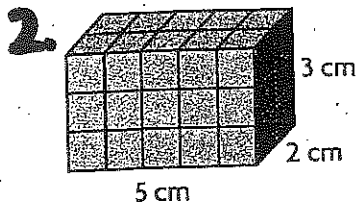
1. The length of the rectangular prism is _____.

The width is _____. So, the area of the base is _____.

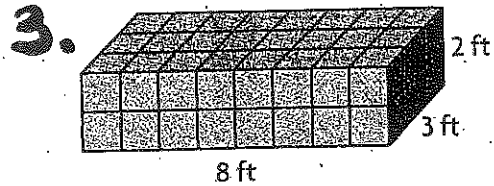
The height is _____. So, the volume of the prism is _____.



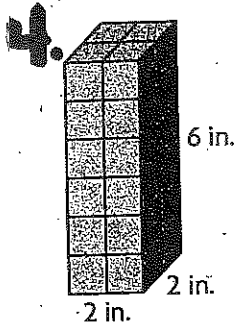
Find the volume.



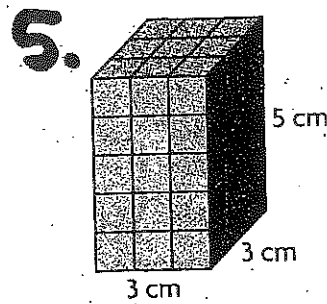
Volume: _____



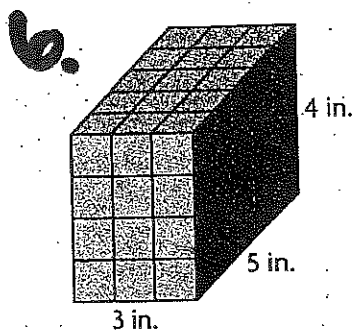
Volume: _____



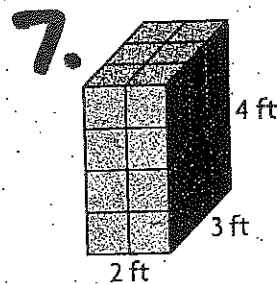
Volume: _____



Volume: _____



Volume: _____

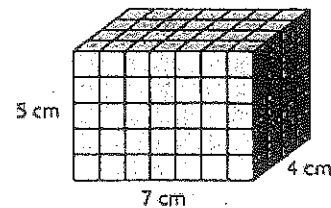


Volume: _____

8. A rectangular block of cheese has a length of 8 centimeters, a width of 4 centimeters, and a height of 3 centimeters. If the block is cut into two equal pieces, what will be the volume of each piece?
- a. 15 cubic cm
 - b. 28 cubic cm
 - c. 48 cubic cm
 - d. 96 cubic cm

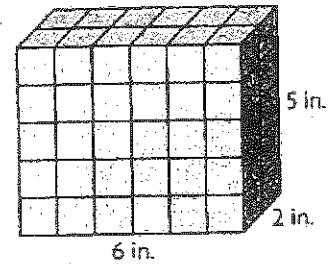
9. What is the volume of the rectangular prism at the right?

- a. 28 square cm
- b. 140 square cm
- c. 28 cubic cm
- d. 140 cubic cm



10. Victor has a collection of 50 number cubes that are each 1 cubic inch. He finds a box that is 4 inches high. He fits 12 cubes into the bottom of the box. Can Victor fit all his number cubes into the box? Explain.
11. The shipping clerk packs a cube with side lengths of 8 inches into a cube with side lengths of 10 inches. What is the volume of the space left in the larger cube for packing materials?
- a. 598 cubic inches
 - b. 1,000 cubic inches
 - c. 512 cubic inches
 - d. 488 cubic inches

12. What is the volume of the rectangular prism shown below?



13. The Jade Restaurant has a large aquarium on display in its lobby. The base of the aquarium is 5 feet by 2 feet. The height of the aquarium is 4 feet. How many cubic feet of water are needed to completely fill the aquarium?

14. A cardboard box has a length of 12 inches, a width of 7 inches, and a height of 4 inches. What is the volume of the box?

- a. 23 cubic inches
- b. 84 cubic inches
- c. 46 cubic inches
- d. 336 cubic inches

15. A storage locker is 15 feet long, 2 feet wide, and 4 feet high. How many boxes that are 3 feet long, 2 feet wide, and 1 foot high can the locker fit?