

# Stack It Up

*Find volume by counting layers of equal bases.*

**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 \_\_\_\_\_

**BASE TIMES LAYERS**

A rectangular prism is built from equal layers of unit cubes. Find the number of cubes in one base layer, then multiply by the number of layers to find the volume.

**WORKED EXAMPLE**

A rectangular prism has a base that is 7 units by 3 units and is 4 layers tall. What is its volume?

1. Find the cubes in one base layer:  $7 \times 3 = 21$ .
2. Multiply by the number of layers:  $21 \times 4 = 84$ .
3. The prism has 84 unit cubes.

**Answer: 84 cubic units**

**PRACTICE** 6 problems

- 1** A rectangular prism is 5 units long, 2 units wide, and 6 units high. What is its volume?

**ANSWER** \_\_\_\_\_

- 2** A prism has a base that is 8 units by 9 units. It has 2 equal layers. What is its volume?

**ANSWER** \_\_\_\_\_

- 3** A rectangular prism has a base that is 11 units by 4 units and is 3 layers tall. What is its volume?

**ANSWER** \_\_\_\_\_

- 4** A prism has a base that is 6 units by 7 units. It has 5 layers. What is its volume?

**ANSWER** \_\_\_\_\_

- 5** A rectangular prism is 12 units long, 2 units wide, and 8 units high. What is its volume?

**ANSWER** \_\_\_\_\_

- 6** A prism has a base that is 9 units by 5 units. It has 10 equal layers. What is its volume?

**ANSWER** \_\_\_\_\_

## APPLY IT Show your work

- 1** A video game store packs small prize cubes in a rectangular display box. The box is 13 cubes long, 6 cubes wide, and 2 cubes high. How many prize cubes fit in the box?

WORK SPACE

ANSWER \_\_\_\_\_

- 2** A student makes a storage box for trading cards. The base is 15 cards long and 8 cards wide, and the box holds 5 layers of cards. How many cards can the box hold?

WORK SPACE

ANSWER \_\_\_\_\_

## CHALLENGE One step up

### CHALLENGE

A toy-brick display uses 960 cubes. Each layer has 12 rows of 8 cubes. How many equal layers are in the display? Explain how you know.

---

---

**PART 1 • PRACTICE**

| # | PROBLEM                                                                                              | ANSWER                 |
|---|------------------------------------------------------------------------------------------------------|------------------------|
| 1 | A rectangular prism is 5 units long, 2 units wide, and 6 units high. What is its volume?             | <b>60 cubic units</b>  |
| 2 | A prism has a base that is 8 units by 9 units. It has 2 equal layers. What is its volume?            | <b>144 cubic units</b> |
| 3 | A rectangular prism has a base that is 11 units by 4 units and is 3 layers tall. What is its volume? | <b>132 cubic units</b> |
| 4 | A prism has a base that is 6 units by 7 units. It has 5 layers. What is its volume?                  | <b>210 cubic units</b> |
| 5 | A rectangular prism is 12 units long, 2 units wide, and 8 units high. What is its volume?            | <b>192 cubic units</b> |
| 6 | A prism has a base that is 9 units by 5 units. It has 10 equal layers. What is its volume?           | <b>450 cubic units</b> |

**PART 2 • APPLY IT**

- 156 prize cubes** One layer holds  $13 \times 6 = 78$  prize cubes. With 2 layers,  $78 \times 2 = 156$  prize cubes.
- 600 cards** One layer holds  $15 \times 8 = 120$  cards. With 5 layers,  $120 \times 5 = 600$  cards.

**CHALLENGE**

**10 layers. One layer has  $12 \times 8 = 96$  cubes, and  $960 / 96 = 10$ .**

Accept correct volume answers with units such as cubic units, unit cubes, cubes, or the named object. For the challenge, accept an explanation that finds 96 cubes per layer and divides 960 by 96.