LESSON MAKER PRO

# Fraction Volume Quest

*Find prism volume with fractional measurements.*

**GRADE 6 · 6.G.A.2**

**CCSS.Math.Content.6.G.A.2** "Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths..."

NAME _____ DATE _____

### MULTIPLY THE THREE EDGES

For a right rectangular prism, multiply length, width, and height: V = l x w x h. You can also find the base area first, b = l x w, then use V = b x h. Packing with cubes whose edge length is a common unit fraction gives the same total volume.

### WORKED EXAMPLE

Find the volume of a right rectangular prism with length 5/6 unit, width 7/10 unit, and height 9/8 unit.

1. Find the base area: b = 5/6 x 7/10 = 7/12 square unit.
2. Multiply the base area by the height: V = 7/12 x 9/8.
3. Simplify: V = 21/32 cubic unit.

**Answer: 21/32 cubic unit**

## PRACTICE 6 problems

**1** A prism is 3/4 unit long, 1/2 unit wide, and 1/4 unit high. It is packed with cubes that each have an edge length of 1/4 unit. How many small cubes fit? What is the prism's volume?

**ANSWER** _____

**2** Find the volume of a prism with length 7/9 unit, width 3/5 unit, and height 3/2 units.

**ANSWER** _____

**3** A prism has length 4/7 unit and width 7/8 unit. Its volume is 3/8 cubic unit. Find its height.

**ANSWER** _____

**4** Find the volume of a prism with length 5/12 unit, width 6/11 unit, and height 11/10 units.

**ANSWER** _____

**5** The base area of a right rectangular prism is 13/15 square unit. Its height is 15/26 unit. Find the volume.

**ANSWER** _____

**6** Find the volume of a prism with length 2/5 unit, width 3/7 unit, and height 5/6 unit.

**ANSWER** _____

## APPLY IT Show your work

**1** The gaming club is making a solid rectangular prize block for a tournament. The block is 1 1/2 inches long, 2/3 inch wide, and 3/5 inch high. How much material is in the block?

WORK SPACE

**ANSWER** _____

**2** A school garden has a rectangular planter box that is 7/8 yard long, 4/9 yard wide, and 1 1/2 yards high. What is the volume inside the planter box?

WORK SPACE

**ANSWER** _____

## CHALLENGE One step up

**CHALLENGE**

A prism is 3/2 units long, 4/3 units wide, and 5/4 units high. Use cubes with edge length 1/12 unit to show that packing and multiplying give the same volume. State the number of cubes and the volume.

_____

_____

**ANSWER KEY**

# Fraction Volume Quest

**GRADE 6 · 6.G.A.2**

## PART 1 · PRACTICE

| # | PROBLEM | ANSWER |
|---|---|---|
| 1 | A prism is 3/4 unit long, 1/2 unit wide, and 1/4 unit high. It is packed with cubes that each have an edge length of 1/4 unit. How many small cubes fit? What is the prism's volume? | **6 small cubes; 3/32 cubic unit** |
| 2 | Find the volume of a prism with length 7/9 unit, width 3/5 unit, and height 3/2 units. | **7/10 cubic unit** |
| 3 | A prism has length 4/7 unit and width 7/8 unit. Its volume is 3/8 cubic unit. Find its height. | **3/4 unit** |
| 4 | Find the volume of a prism with length 5/12 unit, width 6/11 unit, and height 11/10 units. | **1/4 cubic unit** |
| 5 | The base area of a right rectangular prism is 13/15 square unit. Its height is 15/26 unit. Find the volume. | **1/2 cubic unit** |
| 6 | Find the volume of a prism with length 2/5 unit, width 3/7 unit, and height 5/6 unit. | **1/7 cubic unit** |

## PART 2 · APPLY IT

1. **3/5 cubic inch** Convert 1 1/2 to 3/2. Then multiply: 3/2 x 2/3 x 3/5 = 3/5.
2. **7/12 cubic yard** Find the base area: 7/8 x 4/9 = 7/18 square yard. Multiply by the height: 7/18 x 3/2 = 7/12.

## CHALLENGE

**The prism holds 18 x 16 x 15 = 4,320 cubes. Each cube has volume 1/1728 cubic unit, so 4,320 x 1/1728 = 5/2 cubic units. Multiplying the edges also gives 3/2 x 4/3 x 5/4 = 5/2 cubic units.**

Accept equivalent fractions and mixed-number forms when correct. For the packing problem and challenge, accept correct cube counts paired with the matching total volume.