

Volume Builder

Find the space inside prisms with fractional edges.

GRADE 6 • 6.GSR.5.3

6.GSR.5.3 "Calculate the volume of right rectangular prisms with fractional edge lengths by applying the formula, $V = (\text{area of base}) \times (\text{height})$."

NAME _____

DATE _____

BUILD VOLUME IN LAYERS

First multiply the length and width to find the area of the base. Then multiply the base area by the height to find the volume in cubic units.

WORKED EXAMPLE

Find the volume of a right rectangular prism with length $\frac{2}{3}$ unit, width $\frac{5}{4}$ unit, and height $\frac{3}{2}$ units.

1. Area of base = $\frac{2}{3} \times \frac{5}{4} = \frac{5}{6}$ square unit.
2. Volume = $\frac{5}{6} \times \frac{3}{2}$.
3. Volume = $\frac{5}{4}$ cubic units.

Answer: $\frac{5}{4}$ cubic units

PRACTICE 6 problems

- 1** Find the volume of a right rectangular prism with length $\frac{1}{2}$ unit, width $\frac{3}{5}$ unit, and height $\frac{4}{3}$ units.

ANSWER _____

- 2** Find the volume of a right rectangular prism with length $\frac{7}{8}$ unit, width $\frac{2}{7}$ unit, and height $\frac{6}{5}$ units.

ANSWER _____

- 3** Find the volume of a right rectangular prism with length $\frac{9}{10}$ unit, width $\frac{4}{9}$ unit, and height $\frac{5}{6}$ unit.

ANSWER _____

- 4** Find the volume of a right rectangular prism with length $\frac{11}{12}$ unit, width $\frac{3}{11}$ unit, and height $\frac{8}{7}$ units.

ANSWER _____

- 5** Find the volume of a right rectangular prism with length $\frac{13}{14}$ unit, width $\frac{5}{13}$ unit, and height $\frac{7}{9}$ unit.

ANSWER _____

- 6** Find the volume of a right rectangular prism with length $\frac{15}{16}$ unit, width $\frac{2}{15}$ unit, and height $\frac{9}{4}$ units.

ANSWER _____

APPLY IT Show your work

- 1** The esports club has a rectangular prize display. Its base is $1\frac{1}{2}$ feet long and $\frac{2}{3}$ foot wide, and it is $\frac{3}{4}$ foot high. What is the volume of the display?

WORK SPACE

ANSWER _____

- 2** Mia is making a rectangular terrarium for a tiny plant. The inside base is $\frac{3}{5}$ meter by $\frac{5}{6}$ meter, and the terrarium is $1\frac{1}{4}$ meters high. What is its volume?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Bin A has a base that is $\frac{3}{4}$ unit by $\frac{8}{9}$ unit and a height of $\frac{5}{6}$ unit. Bin B has a base that is $\frac{2}{3}$ unit by $\frac{5}{8}$ unit and a height of $\frac{4}{3}$ units. Which bin holds more? Show the volume of each bin to explain your reasoning.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Find the volume of a right rectangular prism with length $\frac{1}{2}$ unit, width $\frac{3}{5}$ unit, and height $\frac{4}{3}$ units.	$\frac{2}{5}$ cubic units
2	Find the volume of a right rectangular prism with length $\frac{7}{8}$ unit, width $\frac{2}{7}$ unit, and height $\frac{6}{5}$ units.	$\frac{3}{10}$ cubic units
3	Find the volume of a right rectangular prism with length $\frac{9}{10}$ unit, width $\frac{4}{9}$ unit, and height $\frac{5}{6}$ unit.	$\frac{1}{3}$ cubic units
4	Find the volume of a right rectangular prism with length $\frac{11}{12}$ unit, width $\frac{3}{11}$ unit, and height $\frac{8}{7}$ units.	$\frac{2}{7}$ cubic units
5	Find the volume of a right rectangular prism with length $\frac{13}{14}$ unit, width $\frac{5}{13}$ unit, and height $\frac{7}{9}$ unit.	$\frac{5}{18}$ cubic units
6	Find the volume of a right rectangular prism with length $\frac{15}{16}$ unit, width $\frac{2}{15}$ unit, and height $\frac{9}{4}$ units.	$\frac{9}{32}$ cubic units

PART 2 • APPLY IT

- $\frac{3}{4}$ cubic foot** Multiply the base dimensions: $1\frac{1}{2} \times \frac{2}{3} = 1$ square foot. Then multiply by the height: $1 \times \frac{3}{4} = \frac{3}{4}$ cubic foot.
- $\frac{5}{8}$ cubic meter** The base area is $\frac{3}{5} \times \frac{5}{6} = \frac{1}{2}$ square meter. Multiply by the height: $\frac{1}{2} \times \frac{5}{4} = \frac{5}{8}$ cubic meter.

CHALLENGE

They hold the same amount. Bin A: $\frac{3}{4} \times \frac{8}{9} \times \frac{5}{6} = \frac{5}{9}$ cubic units. Bin B: $\frac{2}{3} \times \frac{5}{8} \times \frac{4}{3} = \frac{5}{9}$ cubic units.

Accept equivalent fractions and mixed-number forms for all volumes. Students may multiply all three edge lengths at once or find the base area first.