

# Volume of Rectangular Prisms

Fill in each part when its number appears on the slide.

## PART 1 • TARGET

I can find the volume of rectangular prisms and composite figures and explain what volume means.

## PART 2 • WARM-UP

1. What is the area of a rectangle 5 cm long and 3 cm wide?

Key: 15 cm<sup>2</sup>.

2. What is the difference between area and volume?

Key: Area covers a flat surface (square units). Volume fills a space (cubic units).

3. About how many sugar cubes could fit in a small box? How could you find out?

Key: Answers vary. Find how many fit in one layer, then multiply by the number of layers.

## PART 3 • PREDICTION

How could you find how many sugar cubes fill a box without filling it?

Circle one: ☐ Count one layer, then multiply ☐ Guess ☐ Measure the outside only

## PART 4 • VOCABULARY

| Word              | Meaning                                                                            |
|-------------------|------------------------------------------------------------------------------------|
| Volume            | The amount of space inside a 3-D figure, measured in cubic units.                  |
| Cubic unit        | A cube 1 unit on each side (cm <sup>3</sup> , in <sup>3</sup> , ft <sup>3</sup> ). |
| Rectangular prism | A 3-D figure with 6 rectangular faces, like a box.                                 |
| Base (B)          | The area of the bottom face: length × width.                                       |

## PART 5 • VOLUME FILLS SPACE

Volume counts CUBES that fill a space. It is measured in CUBIC units.

Check: How many cubes are in the prism?

Answer: \_\_\_\_\_ cm<sup>3</sup>

Key: 24 cm<sup>3</sup>.  $4 \times 3 \times 2 = 24$ .

## PART 6 • LAYERS: $V = L \times W \times H$

Volume = LENGTH × WIDTH × HEIGHT.

Check: A box is 5 cm × 2 cm × 3 cm. Volume?

Answer: \_\_\_\_\_ cm<sup>3</sup>

Key: 30 cm<sup>3</sup>.  $5 \times 2 \times 3 = 30$ .

## PART 7 • $V = B \times H$

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$V = B \times h$ , where B is the area of the BASE.

Check: Base area =  $12 \text{ cm}^2$ , height = 5 cm. Volume?

Answer: \_\_\_\_\_  $\text{cm}^3$

Key:  $60 \text{ cm}^3$ .  $12 \times 5 = 60$ .

## PART 8 • COMPOSITE FIGURES

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For a COMPOSITE figure, split it into prisms and ADD the volumes.

Check: Prism A is  $4 \times 2 \times 2$ . Prism B is  $2 \times 2 \times 4$ . Total volume?

Answer: \_\_\_\_\_  $\text{cm}^3$

Key:  $32 \text{ cm}^3$ .  $16 + 16 = 32$ .

## PART 9 • WORKED EXAMPLE

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1. Problem: a prism 4 cubes long, 3 wide, and 5 tall.
2. Step 1: One layer:  $4 \times 3 = 12$  cubes.
3. Step 2: There are 5 layers.
4. Step 3:  $12 \times 5 = 60$ .
5. Answer: 60 cubic units. Formula:  $V = l \times w \times h$ .

## PART 10 • WE DO

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A fish tank is 5 dm long, 3 dm wide, and 4 dm tall. How many liters does it hold? ( $1 \text{ dm}^3 = 1 \text{ liter}$ )

Answer: 60 liters

## PART 11 • YOU DO

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A box has a base of  $20 \text{ cm}^2$  and a height of 6 cm. What is its volume?

Answer: \_\_\_\_\_  $\text{cm}^3$

Key:  $120 \text{ cm}^3$ .  $20 \times 6 = 120 \text{ cm}^3$ .

## PART 12 • WORK TIME: THE AQUARIUM BUILDER QUEST

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Write each code piece as you earn it: Level 1: L Level 2: A Level 3: Y Level 4: E Level 5: R

**Final code: LAYER**

## PART 13 • WRAP-UP

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Was your prediction in Part 3 right? One thing I learned today:

Key: Answers vary. Find how many fit in one layer, then multiply by the number of layers.