TEACHER KEY · LESSON WORKSHEET · GRADE 5 · 5.M.4-5.M.5

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^2.
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^3, in^3, ft^3).
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^3

Key: 24 cm^3. 4 × 3 × 2 = 24.

PART 6 · LAYERS: V = L × W × H

Volume = LENGTH × WIDTH × HEIGHT.

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

Answer: _____ cm^3

Key: 30 cm^3. 5 × 2 × 3 = 30.

PART 7 · V = B × H

V = B × h, where B is the area of the BASE.

Check: Base area = 12 cm^2, height = 5 cm. Volume?

Answer: _____ cm^3

Key: 60 cm^3. 12 × 5 = 60.

PART 8 · COMPOSITE FIGURES

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

Check: Prism A is 4 × 2 × 2. Prism B is 2 × 2 × 4. Total volume?

Answer: _____ cm^3

Key: 32 cm^3. 16 + 16 = 32.

PART 9 · WORKED EXAMPLE

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

PART 10 · WE DO

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

Answer: 60 liters

PART 11 · YOU DO

A box has a base of 20 cm^2 and a height of 6 cm. What is its volume?

Answer: _____ cm^3

Key: 120 cm^3. 20 × 6 = 120 cm^3.

PART 12 · WORK TIME: THE SHIPPING CONTAINER ESCAPE

Write each code piece as you earn it: Lock 1: C Lock 2: U Lock 3: B Lock 4: E Lock 5: S

Final code: CUBES

PART 13 · WRAP-UP

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.