LESSON MAKER PRO

Stacked Space

Find the volume of solids made from rectangular prisms.

GRADE 5 · 5.GR.C.5.c

5.GR.C.5.c "Determine the volumes of composite figures by decomposing them into non-overlapping right rectangular prisms and adding their volumes together to solve problems in context"

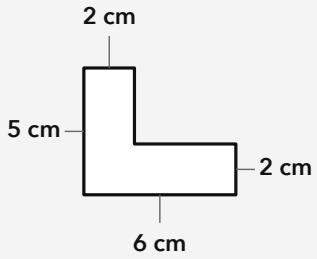
NAME _____ DATE _____

SPLIT AND ADD

Split a stepped solid into rectangular prisms that do not overlap. Find each prism's volume by multiplying length × width × height, then add the volumes. Write the answer in cubic units.

WORKED EXAMPLE

The figure shows the front face of a solid that is 3 cm deep. What is its volume?



1. Bottom prism: 6 × 2 × 3 = 36 cm^3.
2. Top prism: 2 × (5 - 2) × 3 = 18 cm^3.
3. Add: 36 + 18 = 54 cm^3.

Answer: 54 cm^3

PRACTICE 4 problems

1 Two prisms join without overlapping. Their dimensions are 7 × 8 × 9 cm and 7 × 8 × 10 cm. What is the total volume?

ANSWER _____

2 A solid has two non-overlapping parts measuring 8 × 9 × 10 cm and 7 × 9 × 10 cm. Find its volume.

ANSWER _____

3 Two joined prisms measure 7 × 7 × 8 cm and 7 × 7 × 9 cm. Find their total volume. Which prism is larger?

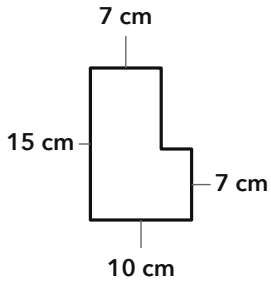
ANSWER _____

4 A solid joins prisms measuring 8 × 8 × 9 cm and 8 × 9 × 10 cm. A student says its volume is 1,200 cm^3. Find the correct volume. Is the claim too high or too low?

ANSWER _____

APPLY IT Show your work

1 A display stand for game figures has the front face shown. It is 9 cm deep. What is its volume?



ANSWER _____

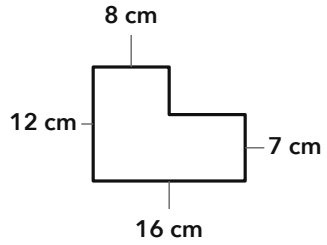
2 Two box-shaped compartments in a robot prop join without overlapping. They measure 7 × 9 × 11 cm and 8 × 9 × 11 cm. What is their total volume?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A stepped game shelf has the front face shown and is 9 cm deep. Split it into prisms in two different ways. Write both volume sums and the total volume.



WORK SPACE AND ANSWER

Stacked Space

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Two prisms join without overlapping. Their dimensions are 7 × 8 × 9 cm and 7 × 8 × 10 cm. What is the total volume?	**1,064 cm^3**
2	A solid has two non-overlapping parts measuring 8 × 9 × 10 cm and 7 × 9 × 10 cm. Find its volume.	**1,350 cm^3**
3	Two joined prisms measure 7 × 7 × 8 cm and 7 × 7 × 9 cm. Find their total volume. Which prism is larger?	**833 cm^3; the 7 × 7 × 9 cm prism**
4	A solid joins prisms measuring 8 × 8 × 9 cm and 8 × 9 × 10 cm. A student says its volume is 1,200 cm^3. Find the correct volume. Is the claim too high or too low?	**1,296 cm^3; too low**

PART 2 · APPLY IT

1. **1,134 cm^3** The bottom prism is 10 × 7 × 9 = 630 cm^3. The top prism is 7 × (15 - 7) × 9 = 504 cm^3, so the total is 1,134 cm^3.
2. **1,485 cm^3** Find each compartment's volume: 7 × 9 × 11 = 693 and 8 × 9 × 11 = 792 cm^3. Add them to get 1,485 cm^3.

CHALLENGE

(16 × 7 × 9) + (8 × 5 × 9) = 1,368 cm^3; (8 × 12 × 9) + (8 × 7 × 9) = 1,368 cm^3

Accept either order for the prisms in a sum. For the challenge, accept any two different non-overlapping splits that each give 1,368 cm^3.