

Geometry Build Lab

Build, split, and check geometric measures.

GRADE 7 • TEKS 7.9

7.9 "Expressions, equations, and relationships. The student applies mathematical process standards to solve geometric problems. The student is expected to: solve problems involving the volume of rectangular prisms, triangular prisms..."

NAME _____

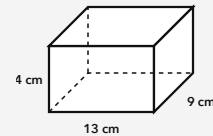
DATE _____

CHOOSE AND CHECK

Break a geometry situation into simple parts. For a prism, $V=Bh$. For a pyramid, $V=Bh/3$, and add face areas from a net for surface area. Use $A=\pi r^2$ and $C=2\pi r$ for circles.

WORKED EXAMPLE

A museum display case is the rectangular prism shown. Find its volume.



1. Use $V=lwh$.
2. $V=13 \times 9 \times 4$.
3. $V=468 \text{ cm}^3$.
4. Check: volume uses cubic units.

Answer: 468 cm^3

PRACTICE 4 problems

- 1** A maker packs a triangular-prism box. Its triangular base has $b=5 \text{ cm}$ and $h=6 \text{ cm}$. The box is 10 cm long. Plan with a formula, then find the volume.

ANSWER _____

- 2** A display is a rectangular pyramid with a 10 cm by 6 cm base and height 15 cm . A student says its volume is 600 cm^3 . Check the claim and state the correct volume.

ANSWER _____

- 3** An art club cuts a circular sticker with radius 5 cm . Find its area and circumference in terms of π . Check that the units are correct.

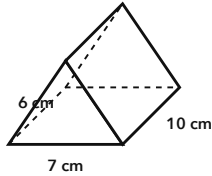
ANSWER _____

- 4** An L-shaped shelf starts as an 11 cm by 8 cm rectangle. A 2 cm by 5 cm corner is cut away. Explain the subtraction plan and find the shelf area.

ANSWER _____

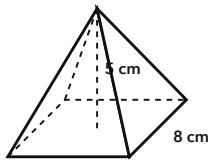
APPLY IT Show your work

- 1** A robotics team fills the triangular-prism prize bin shown. Use the labeled triangular base and length to find its capacity. Briefly explain why the base area is halved.



ANSWER _____

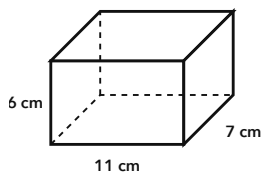
- 2** A game club makes the solid rectangular-pyramid trophy shown. Find its volume. A teammate multiplied lwh , explain why that result is not final.



ANSWER _____

CHALLENGE One step up

A streaming club makes a closed rectangular-prism prop shown. Sketch or list the faces in its net. Find the total cardboard area and explain how the net checks your total.



WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	A maker packs a triangular-prism box. Its triangular base has $b=5$ cm and $h=6$ cm. The box is 10 cm long. Plan with a formula, then find the volume.	150 cm^3
2	A display is a rectangular pyramid with a 10 cm by 6 cm base and height 15 cm. A student says its volume is 600 cm^3 . Check the claim and state the correct volume.	No; 300 cm^3.
3	An art club cuts a circular sticker with radius 5 cm. Find its area and circumference in terms of π . Check that the units are correct.	Area = $25\pi \text{ cm}^2$; circumference = $10\pi \text{ cm}$.
4	An L-shaped shelf starts as an 11 cm by 8 cm rectangle. A 2 cm by 5 cm corner is cut away. Explain the subtraction plan and find the shelf area.	78 cm^2; subtract 2×5 from 11×8.

PART 2 • APPLY IT

- 210 cm^3 ; the triangular base is half of a 7 cm by 6 cm rectangle.** Find the triangular base area, $7 \times 6 / 2 = 21 \text{ cm}^2$. Multiply by the 10 cm prism length.
- 160 cm^3 ; a pyramid has one-third the volume of a prism with the same base and height.** The base area is $12 \times 8 = 96 \text{ cm}^2$. Multiply by 5, then take one-third.

CHALLENGE

370 cm^2 ; add two 11 cm by 7 cm faces, two 11 cm by 6 cm faces, and two 7 cm by 6 cm faces.

Accept equivalent formulas and correct unit notation. For explanations, accept any clear statement that a triangular base is half a rectangle or that a pyramid uses one-third of the matching prism volume.