LESSON MAKER PRO

Model It Right

Use geometric solids to describe real objects and find their volumes.

HIGH SCHOOL · HSG-MG.A.1

CCSS.Math.Content.HSG-MG.A.1 "Use geometric shapes, their measures, and their properties to describe objects (e.g., modeling a tree trunk or a human torso as a cylinder). *"

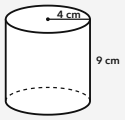
NAME _____ DATE _____

CHOOSE A USEFUL SOLID

Choose a geometric solid whose shape matches the object, such as a cylinder, sphere, cone, prism, or cube. Then use the solid's dimensions to describe the object quantitatively, often by finding volume in cubic units. For a cylinder, V = pi r^2h.

WORKED EXAMPLE

The figure represents a round storage tube. Find its volume.

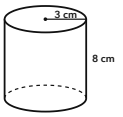


1. Use V = pi r^2h.
2. V = pi$(4)^2(9)$.
3. V = 144pi cm^3.

Answer: 144pi cm^3

PRACTICE 6 problems

1 Use the figure. Name the solid that models the object, then find its volume.



ANSWER _____

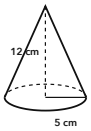
2 A shipping box is 5 cm long, 6 cm wide, and 7 cm high. Name the geometric solid that models the box, then find its volume.

ANSWER _____

3 A round display globe has a radius of 2 cm. Name the geometric solid that models the globe, then find its volume.

ANSWER _____

4 Use the figure. Name the solid that models the object, then find its volume.



ANSWER _____

5 A wedge-shaped foam support has a right-triangle end with legs 6 cm and 10 cm. The support extends 11 cm. Name the geometric solid that models it, then find its volume.

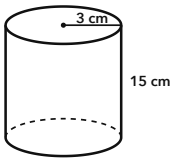
ANSWER _____

6 A cube-shaped storage container has an edge length of 7 cm. Name the geometric solid that models it, then find its volume.

ANSWER _____

APPLY IT Show your work

1 A student designs a Bluetooth speaker with the shape shown in the figure. What solid models the speaker, and what is its volume?



ANSWER _____

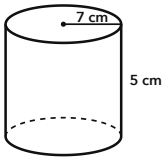
2 The theater club builds a solid stage block that is 8 cm long, 12 cm wide, and 14 cm high. What geometric solid describes the block, and how much space does it occupy?

WORK SPACE

ANSWER _____

CHALLENGE One step up

A snack company is choosing between the cylindrical container shown and a rectangular-prism container that is 10 cm long, 10 cm wide, and 8 cm high. Which container holds more? Explain your reasoning using volume.



WORK SPACE AND ANSWER

ANSWER KEY

Model It Right

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Use the figure. Name the solid that models the object, then find its volume.	**cylinder; 72pi cm^3**
2	A shipping box is 5 cm long, 6 cm wide, and 7 cm high. Name the geometric solid that models the box, then find its volume.	**rectangular prism; 210 cm^3**
3	A round display globe has a radius of 2 cm. Name the geometric solid that models the globe, then find its volume.	**sphere; 32pi/3 cm^3**
4	Use the figure. Name the solid that models the object, then find its volume.	**cone; 100pi cm^3**
5	A wedge-shaped foam support has a right-triangle end with legs 6 cm and 10 cm. The support extends 11 cm. Name the geometric solid that models it, then find its volume.	**triangular prism; 330 cm^3**
6	A cube-shaped storage container has an edge length of 7 cm. Name the geometric solid that models it, then find its volume.	**cube; 343 cm^3**

PART 2 · APPLY IT

1. **cylinder; 135pi cm^3** Model the speaker as a cylinder. Use V = pi r^{2}h = pi(3)^2(15).
2. **rectangular prism; 1,344 cm^3** Model the block as a rectangular prism. Multiply 8 by 12 by 14 to find its volume.

CHALLENGE

The rectangular-prism container holds more. Its volume is 800 cm^3; the cylinder's volume is 245pi cm^3, and 245pi is less than 770 because pi is less than 22/7.

Accept pi in place of π and equivalent exact forms, such as (32/3)pi. For the challenge, accept a correct comparison using 245pi approximately equal to 769.7 cm^3.