LESSON MAKER PRO

Volume in Action

Find the space inside curved solids.

GRADE 7 · 7.GR.B.4.b

7.GR.B.4.b "Solve problems involving volume of curved-surface solids, including cones, cylinders, and spheres—figures without edges."

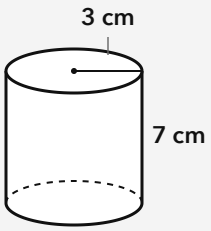
NAME _____ DATE _____

VOLUME RULES

For a cylinder, $V = \pi r^2 h$. For a cone, $V = \pi r^2 h/3$, and for a sphere, $V = 4\pi r^3/3$. Use the radius r, and leave your answers in terms of π.

WORKED EXAMPLE

Find the volume of the cylinder shown.



1. $V = \pi r^2 h$
2. $V = \pi(3)^2(7)$
3. $V = 63\pi$ cm^3

Answer: 63π cm^3

PRACTICE 4 problems

1 Find the volume of a cylinder with radius 5 cm and height 8 cm.

ANSWER _____

2 Find the volume of a cone with radius 6 cm and height 10 cm.

ANSWER _____

3 Find the volume of a sphere with radius 2 cm.

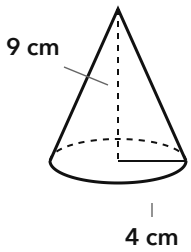
ANSWER _____

4 Find the volume of a sphere with diameter 12 cm.

ANSWER _____

APPLY IT Show your work

1 A cone-shaped popcorn cup has the dimensions shown. How much popcorn can it hold if filled to the tip?



ANSWER _____

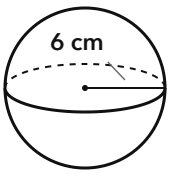
2 A round foam ball for a game has a radius of 9 cm. What is its volume?

WORK SPACE

ANSWER _____

CHALLENGE One step up

The sphere shown and a cone have the same radius. The cone is 12 cm tall. Which has greater volume, and by how much? Show your reasoning.



WORK SPACE AND ANSWER

ANSWER KEY # Volume in Action

GRADE 7 · 7.GR.B.4.b

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find the volume of a cylinder with radius 5 cm and height 8 cm.	**200π cm³**
2	Find the volume of a cone with radius 6 cm and height 10 cm.	**120π cm³**
3	Find the volume of a sphere with radius 2 cm.	**32π/3 cm³**
4	Find the volume of a sphere with diameter 12 cm.	**288π cm³**

PART 2 · APPLY IT

1. **48π cm³** Use the cone formula: $V = \pi(4)^2(9)/3 = 48\pi$ cm³.
2. **972π cm³** Use the sphere formula: $V = 4\pi(9)^3/3 = 972\pi$ cm³.

CHALLENGE

The sphere is greater by 144π cm³. Its volume is 288π cm³, and the cone's volume is 144π cm³.

Accept equivalent exact expressions in terms of π. Answers should use cubic centimeters.