LESSON MAKER PRO

Cylinder Volume Lab

Find the space inside right circular cylinders.

GRADE 7 · MA.7.GR.2

MA.7.GR.2 "Solve problems involving three-dimensional figures, including right circular cylinders."

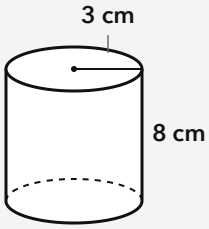
NAME _____ DATE _____

VOLUME OF A CYLINDER

The volume of a right circular cylinder is $V = \pi r^2 h$. Square the radius first, then multiply by π and the height.

WORKED EXAMPLE

Find the volume of the cylinder shown.

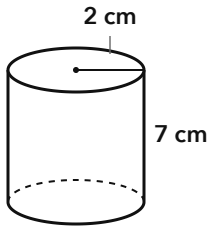


1. Use $V = \pi r^2 h$.
2. Substitute: $V = \pi(3)^2(8)$.
3. Simplify: $V = \pi(9)(8) = 72\pi$ cm^3.
4. The volume is 72π cm^3.

Answer: 72π cm^3

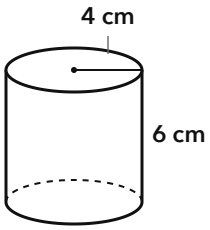
PRACTICE 6 problems

1 Find the volume of the cylinder shown.



ANSWER _____

2 Find the volume of the cylinder shown.



ANSWER _____

3 A right circular cylinder has a radius of 5 cm and a height of 4 cm. Find its volume.

ANSWER _____

4 A cylinder has a diameter of 12 m and a height of 9 m. Find its volume.

ANSWER _____

5 A cylinder has a volume of 450π cm^3 and a height of 2 cm. Find its radius.

ANSWER _____

6 Cylinder A has a radius of 1 unit and a height of 20 units. Cylinder B has a radius of 2 units and a height of 5 units. Do the cylinders have equal volumes? Show your calculations.

ANSWER _____

_____

APPLY IT Show your work

1 A student makes a cylindrical pencil cup with an inside radius of 5 cm and an inside height of 14 cm. How much space is inside the cup?

WORK SPACE

ANSWER _____

2 A reusable water bottle is shaped like a cylinder. Its diameter is 8 cm, and its height is 15 cm. What is the bottle's capacity in cubic centimeters?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Cylinder A has a radius of 2 cm and a height of 18 cm. Cylinder B has a radius of 4 cm and a height of 5 cm. Which cylinder has the greater volume, and by how much? Explain using calculations.

WORK SPACE AND ANSWER

ANSWER KEY

Cylinder Volume Lab

GRADE 7 · MA.7.GR.2

PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find the volume of the cylinder shown.	**28π cm^3**
2	Find the volume of the cylinder shown.	**96π cm^3**
3	A right circular cylinder has a radius of 5 cm and a height of 4 cm. Find its volume.	**100π cm^3**
4	A cylinder has a diameter of 12 m and a height of 9 m. Find its volume.	**324π m^3**
5	A cylinder has a volume of 450π cm^3 and a height of 2 cm. Find its radius.	**15 cm**
6	Cylinder A has a radius of 1 unit and a height of 20 units. Cylinder B has a radius of 2 units and a height of 5 units. Do the cylinders have equal volumes? Show your calculations.	**Yes. Each cylinder has a volume of 20π cubic units.**

PART 2 · APPLY IT

1. **350π cm^3** Use $V = \pi r^2 h$. Compute $\pi(5)^2(14) = 350\pi$ cm^3.
2. **240π cm^3** The radius is 4 cm because the diameter is 8 cm. Compute $V = \pi(4)^2(15) = 240\pi$ cm^3.

CHALLENGE

Cylinder B has the greater volume by 8π cm^3. Cylinder A: $\pi(2)^2(18) = 72\pi$ cm^3. Cylinder B: $\pi(4)^2(5) = 80\pi$ cm^3.

Accept equivalent forms that include π and correct cubic units for volume. For items involving diameter, students must divide the diameter by 2 before using the volume formula.