Volume of Cylinders

How much can it hold inside?

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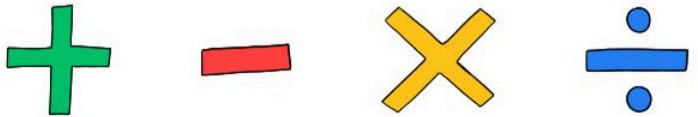
Tall or Wide?

Which container do you think holds more?

- **A** Tall, thin can
- **B** Short, wide can
- **C** They look about equal

Vote with your hands, then explain why.



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$a^2+b^2=c^2$

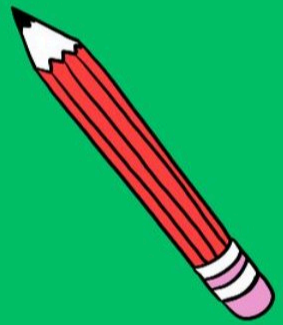
Prism vs Cylinder

Rectangular Prism

- Base is rectangle: length times width
- Layers stack up by height
- Volume = base area times height

Cylinder

- Base is circle: pi times r squared
- Circles stack up by height
- Volume = base area times height



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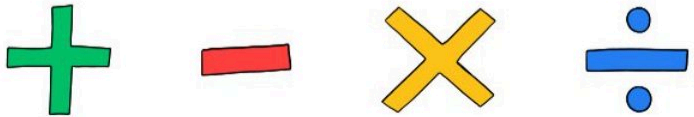
DID YOU KNOW?

A 10-cm cube holds exactly 1 liter.

That is 1,000 cubic centimeters, so cylinder volumes can also mean milliliters or liters.



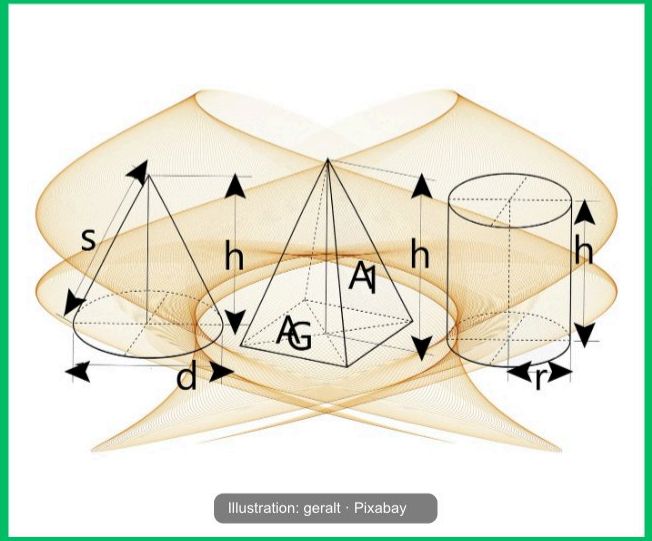
Illustration: OpenClipart-Vectors · Pixabay



$a^2+b^2=c^2$

Think, pair, share

If you know a circle's area, what one step gives cylinder volume?



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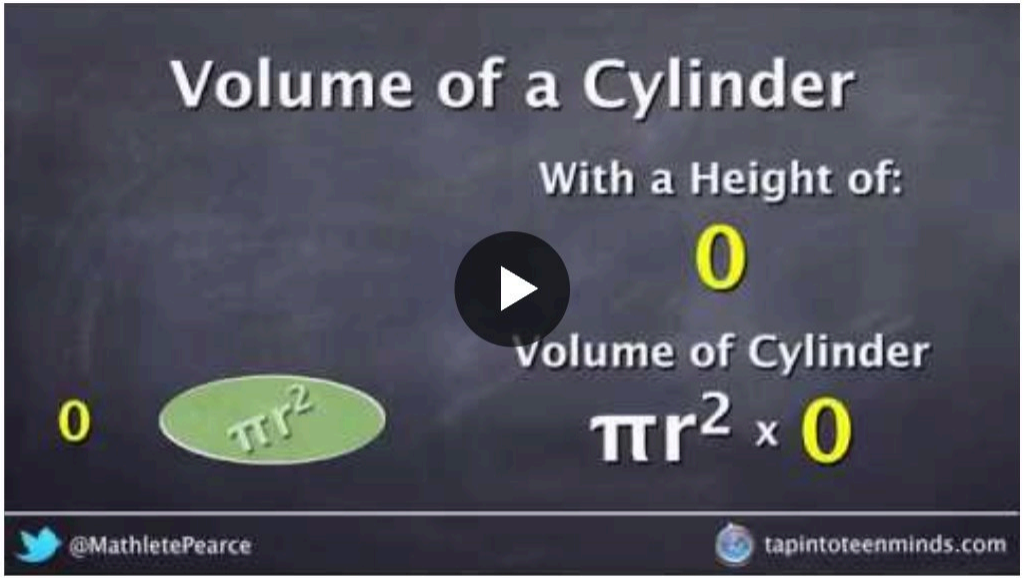
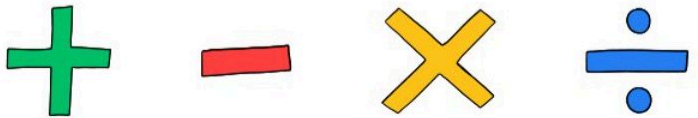
Why V = pi r squared h?



▶ 0:00 – 3:31

- Watch for circle area first
- Watch how height stacks layers



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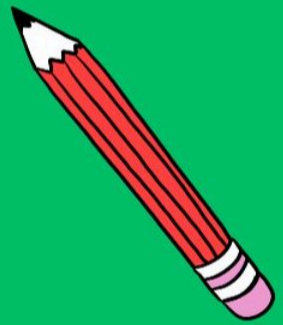
$a^2+b^2=c^2$

BIG IDEA

Cylinder volume is base circle area stacked by height.





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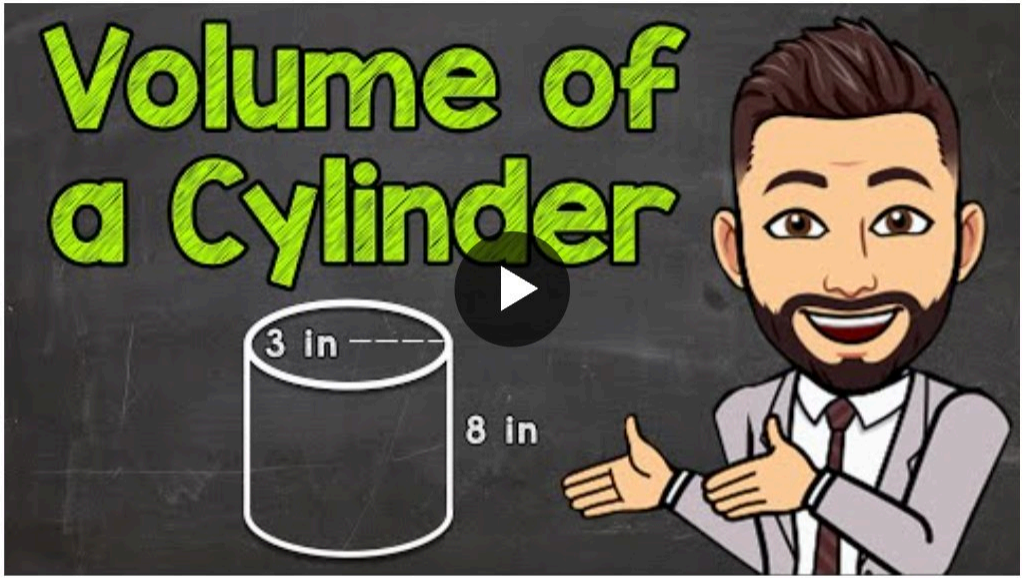
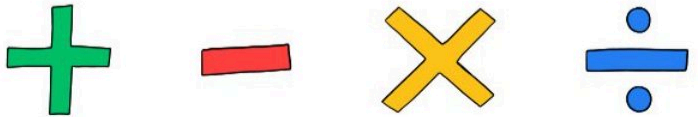
Find the volume step by step



▶ 0:00 – 3:57

- Check: radius or diameter?
- Square first, then multiply
- Listen for cubic units



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$a^2+b^2=c^2$

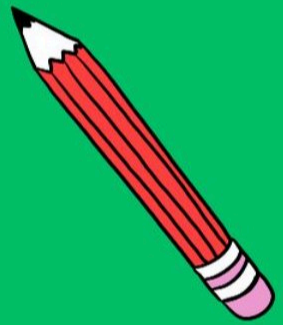
Your task

In pairs, solve 4 cylinder problems: find volumes and one missing height.

1. Halve diameter to get radius
2. Calculate base area pi r squared first
3. Multiply by height, label units cubed

15 min

In pairs



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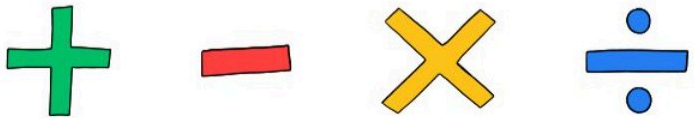
What to remember

Cylinder volume

- V = pi r squared h
- Base area first
- Answer in cubes
- Radius = diameter / 2
- Multiply by height
- Sense-check result



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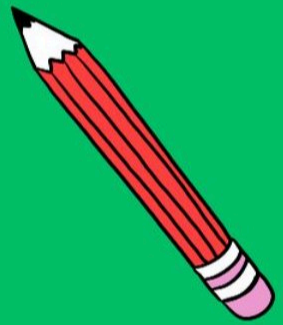
$a^2+b^2=c^2$

Quick quiz

1. What is the volume formula for a cylinder?
2. r = 2 in, h = 6 in. Volume in terms of pi?
3. Diameter = 6 cm, height = 10 cm. Volume?
4. V = 200 pi cm3, r = 5 cm. Find height.



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