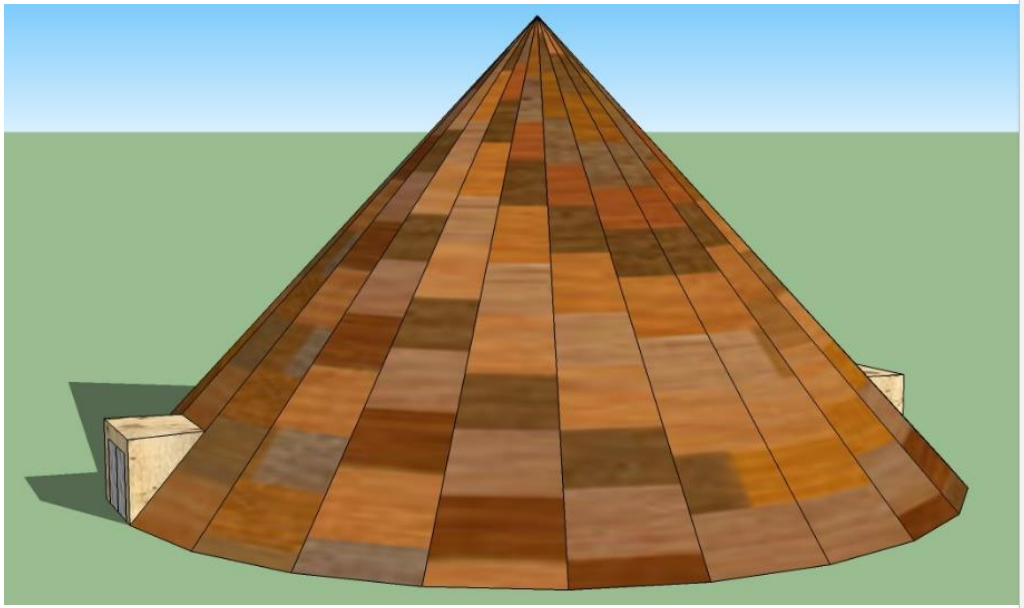
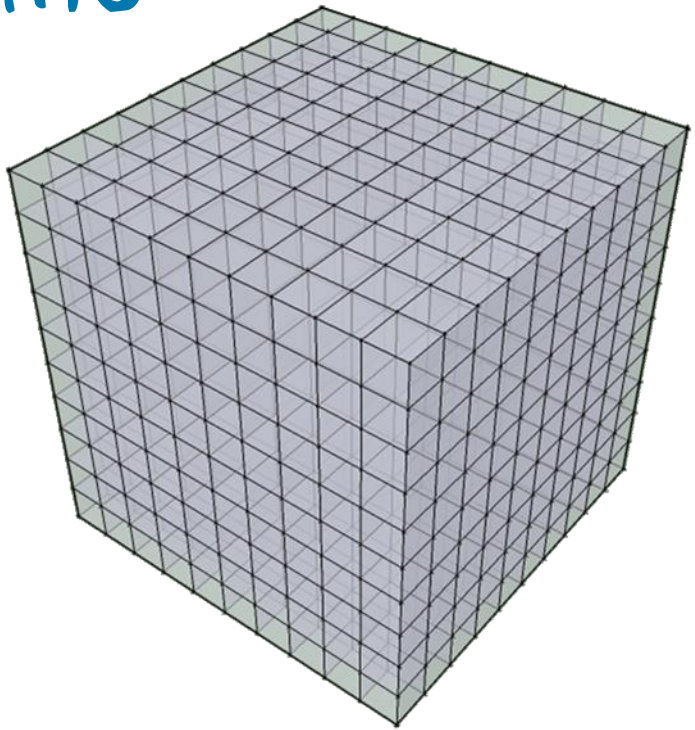


This 30 yd-tall conical storage building can hold 45,000 yd^3 of sand. It has 2 doors, exactly opposite from each other. If you were walking along the perimeter of the building, what is the distance you would walk between doors?

In this lesson, you will learn to solve problems involving cone volume by visualizing the problem and working backward.

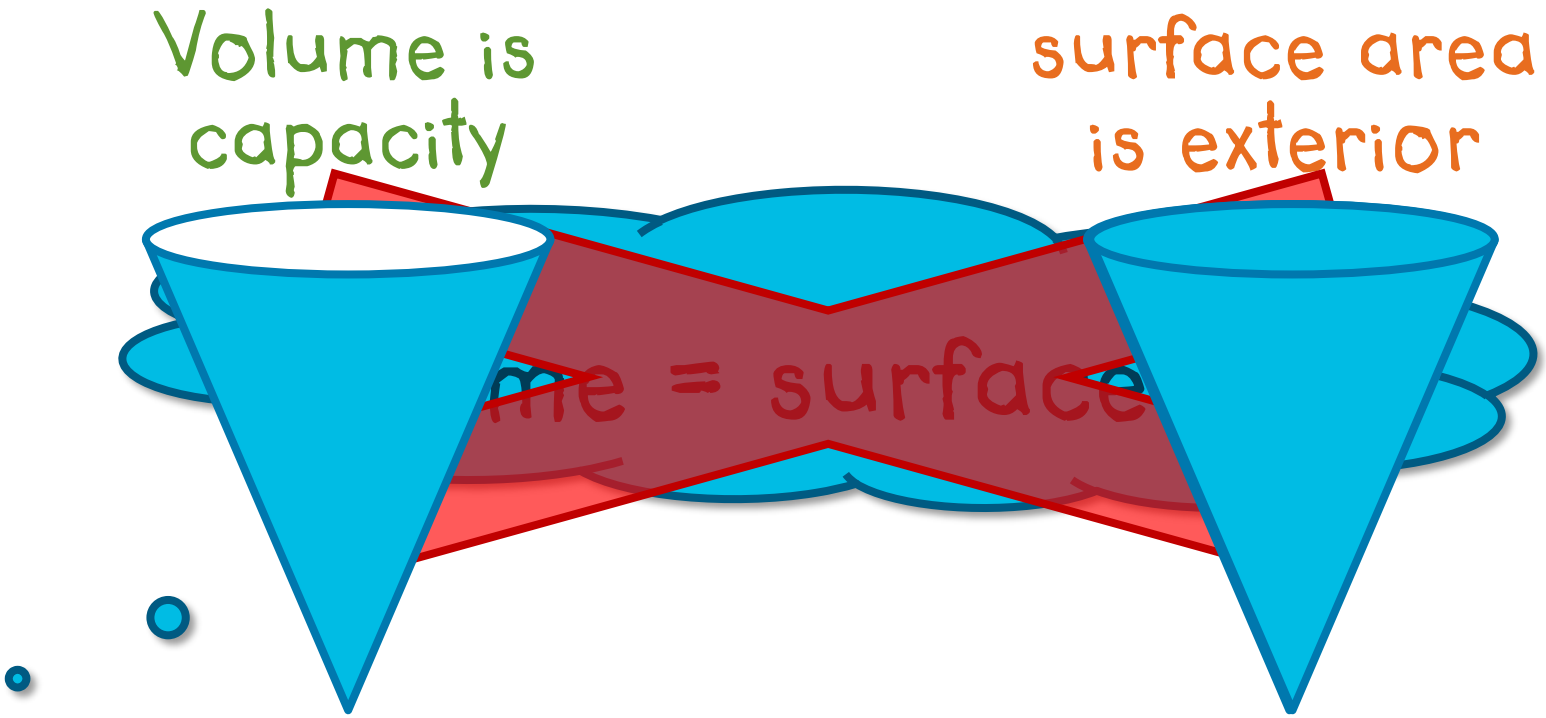
Let's Review

Volume



Number of cubic units of space a solid occupies

A Common Misunderstanding



Core Lesson

Identify key information

This 30 yd-tall conical storage building can hold 45,000 yd^3 of sand. It has 2 doors, exactly opposite from each other. If you were walking along the perimeter of the building, what is the distance you would walk between doors?

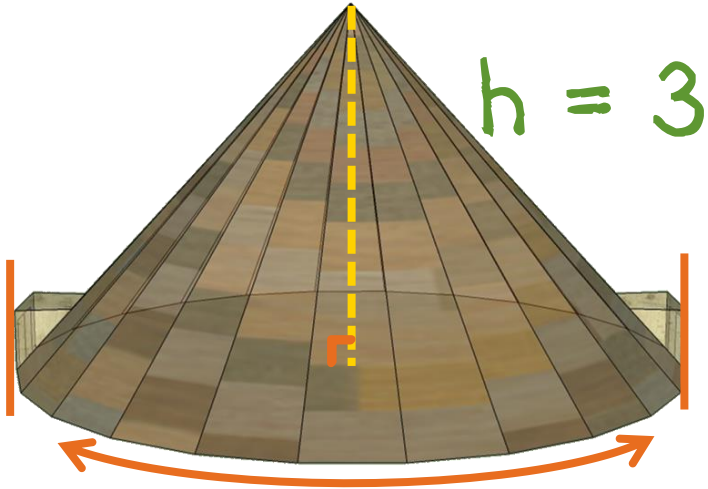
Core Lesson

This 30 yd-tall conical storage building can hold 45,000 yd^3 of sand. It has 2 doors, exactly opposite from each other. If you were walking along the perimeter of the building, what is the distance you would walk between doors?

Visualize the problem

$V = 45{,}000 yd^3$

$h = 30 yd$



Core Lesson

This 30 yd-tall conical storage building can hold 45,000 yd^3 of sand. It has 2 doors, exactly opposite from each other. If you were walking along the perimeter of the building, what is the distance you would walk between doors?

Radius of cone

$V = 45{,}000\ yd^3$

$V = 1/3(\pi r^2)h$

$45{,}000 = 1/3(3.14159 \times r^2) \times 30$

$45{,}000 = 31.4159 \times r^2$

$1432.3957 \approx r^2$

$37.85\ yd \approx r$

Core Lesson

This 30 yd-tall conical storage building can hold 45,000 yd^3 of sand. It has 2 doors, exactly opposite from each other. If you were walking along the perimeter of the building, what is the distance you would walk between doors?

Work backward

$r = 37.85$ yd

$1/2C = (1/2 \times 2) \times \pi \times r$

$= \pi \times 37.85$ yd

$= 118.9$ yd

Core Lesson

To summarize:

1. Identify key information
2. Visualize the problem
3. Solve, working backward to find the missing term

In this lesson, you learned to solve problems involving cone volume by visualizing the problem and working backward.