Lesson # 82

Cylinders: Volume and Surface Area

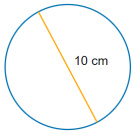
Date

Warmup

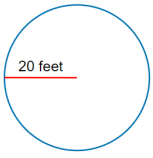
1. π is a number that helps us with calculating area, volume and circumference of circles. The first 50 digits of π are 3.14159265358979323846264338327950288419716939937510

What value for π should you use in this class? _____

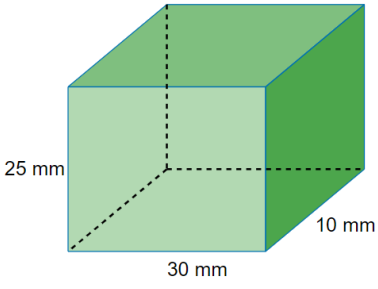
2. Calculate Area:



3. Find the circumference.



4. What is the volume of the rectangular prism?



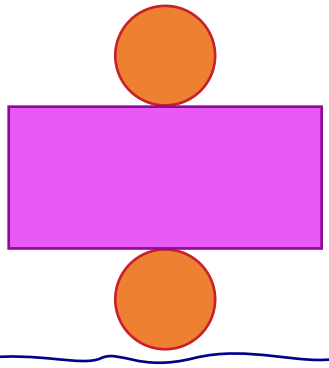
I. Cylinders

Cylinder: **A 3-dimensional figure that has two circular bases.**

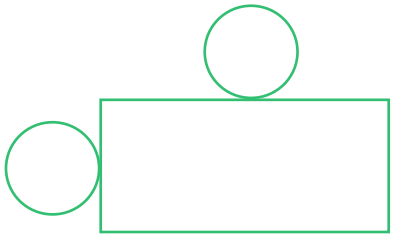
Base: The top and bottom of the cylinder. The bases are circles.

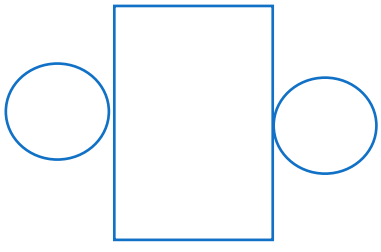
Height: The distance between the two bases.

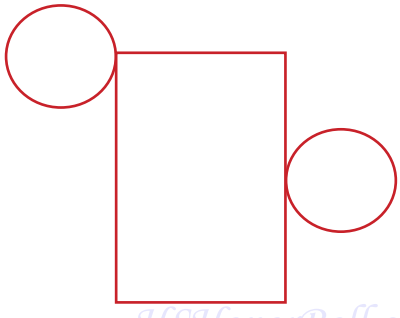
A net of a cylinder



5. Which of the following nets will make a cylinder?



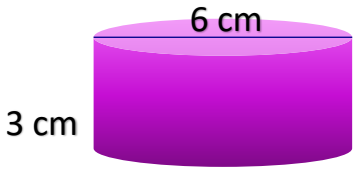




II. Volume of a Cylinder

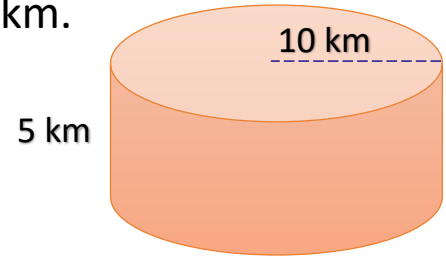
To find the volume of an object multiple the area of the base times the height.

$V = \pi r^2 h$

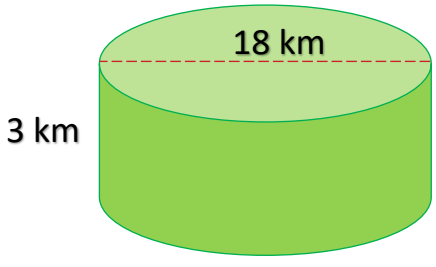


1. Write the Formula
2. Substitute the known values
3. Simplify
4. Write the Units
5. Check – Does the answer make sense?

6. Calculate the volume of a cylinder with a radius of 10 km and a height of 5 km.



7. Calculate the volume of a cylinder with a diameter of 18 km and a height of 3 km.



8. Write the steps for solving formula questions.

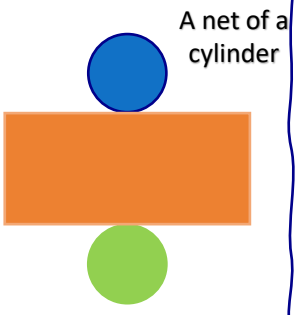
III. Surface Area of a Cylinder

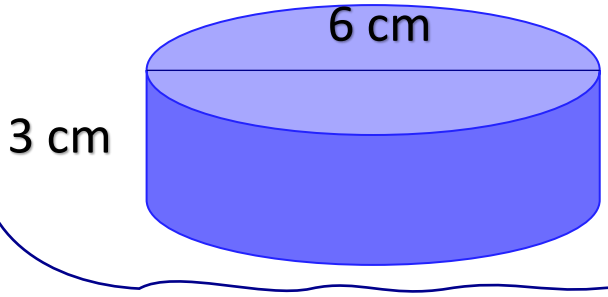
To find the **total surface area** of an object find the area of each face.
Draw the net of the object to help 'see' each surface.

TSA = Area of the top base + Area of the bottom base + area of the rectangular side

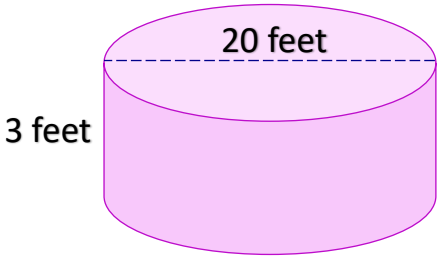
$$TSA = \pi r^2 + \pi r^2 + \pi dh$$

$$TSA = 2\pi r^2 + \pi dh$$





9. Calculate the total surface area of a cylinder with a diameter of 20 feet and a height of 3 feet.



IV. Practice

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