

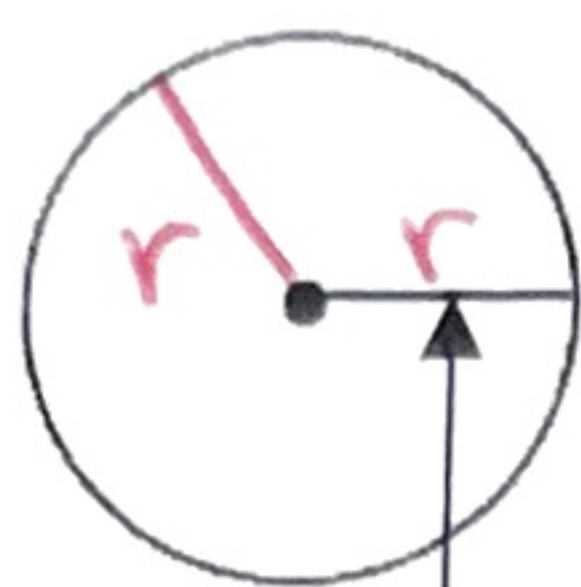
Unit 6 Day 1: Pi

Focus Question: What is pi?

A. Vocabulary of a circle



Center



radius



diameter



Circumference

Definitions:

the point that is equidistant from the edge of the circle

the length from the center to the edge

the length from edge to edge through the center

the length around the circle (perimeter)

Relationship of Diameter and radius:

$$d = r + r$$

$$d = 2r \quad \text{or} \quad r = \frac{d}{2}$$

B. Discovering Pi Activity

1. Get into a group of 3 or 2
2. Each group needs the supplies listed
3. With your 1 circular item at a time:

Supplies

- 1) Ruler marked with **CENTIMETERS**
- 2) Piece of string
- 3) ONE circular object at a time

- a. Write the item on your table below.
- b. Use the string to wrap once around the item and find the circumference. (DO NOT CUT THE STRING, just mark the place that indicates how much string it took. Then, measure the length of string needed. Write this distance on your table below.
- c. Measure the diameter of the item (as close to the diameter as possible if no center is marked). Write this distance on your table below.

Object	Circumference	Diameter	Ratio C to d as a decimal
Cylinder	32.8 cm	10.5 cm	$\frac{32.8}{10.5} \approx 3.12$
AVERAGE of your RATIOS			3.34

All of these ratios are very close to $3.14 \approx \pi$

$$\text{So } \frac{C}{d} \approx \pi$$

The string stretches may not have exact diameter

C. Another way to see π

$(11.4, 35.3)$ ~~$(8.6, 27.5)$~~
 $(3.6, 11.4)$
 $(5.8, 18.5)$

1. Plot your five items on the graph. After the teacher checks your graph, put them on the class graph. Make sure you label the coordinates of your point.

2. Is the graph linear or non-linear? Explain.

Linear b/c it doesn't curve.

3. Use two of the points to find the slope of the line as a decimal. (Remember slope is $\frac{\Delta y}{\Delta x}$)

$$\frac{35.3 - 32.8}{11.4 - 10.5} = \frac{2.5}{0.9} \approx 2.78$$

4. Use a different two points to find the slope as a decimal.

$$\frac{11.4 - 18.5}{3.6 - 5.8} = \frac{-7.1}{-2.2} \approx 3.23$$

5. Use a different two points to find the slope as a decimal.

6. All three of your slopes were very close to 3.14.

Complete the fraction below:

$$\frac{\Delta y}{\Delta x} = \frac{\Delta \text{Circum}}{\Delta \text{diam}} = \pi$$

7. What is pi?

Pi is the ratio of a circle's circumference to its diameter

8. What is the formula for circumference of a circle?

$$C = \pi \cdot d$$

$$C = \pi d$$

9. How would the formula look if you had the radius instead of the diameter?

$$C = \pi(2r)$$

$$C = 2\pi r$$

$$d = 2r$$

Memorize

