

Objective

Exploring the Ratio of Circle Circumference to Diameter

Warm-Up



Scale up or down to determine an equivalent ratio.

1. $\frac{18 \text{ miles}}{5 \text{ hours}} = \frac{?}{1 \text{ hour}}$

2. $\frac{\$750}{5 \text{ days}} = \frac{?}{1 \text{ day}}$

3. $\frac{12 \text{ in.}}{1 \text{ ft}} = \frac{?}{10 \text{ ft}}$

4. $\frac{48 \text{ oz}}{6 \text{ lb}} = \frac{?}{1 \text{ lb}}$



The Circumference Formula



The number pi (π) is the ratio of the circumference of a circle to its diameter. That is $\pi = \frac{\text{circumference of a circle}}{\text{diameter of a circle}}$, or $\pi = \frac{C}{d}$, where C is the circumference of the circle, and d is the diameter of the circle. The number π has an infinite number of decimal digits that never repeat. Some approximations used for the value π are 3.14 and $\frac{22}{7}$.

1. Use this information to write a formula for the circumference of a circle, where d represents the diameter of a circle and C represents the circumference of a circle.

2. Rewrite the formula for the circumference of a circle, where r represents the radius of a circle and C represents the circumference of a circle.

3. Use different representations for π to calculate the circumference of a circle. a. Calculate the circumference of a circle with a diameter of 4.5 centimeters and a circle with a radius of 6 inches.

Round your answer to the nearest ten-thousandths, if necessary.

Value for	$d = 4.5$ centimeters	$r = 6$ inches
π		
Use the π Key on a Calculator		
Use 3.14 for π		
Use $\frac{22}{7}$ for π		

b. Compare your circumference calculations. How do the different values of π affect your calculations?

4. Use the circumference of a circle formula to determine each unknown. Use 3.14 for π .

a. Compute the diameter of the circle with a circumference of 65.94 feet.

b. Compute the radius of the circle with a circumference of 109.9 millimeters.

5. What is the minimum amount of information needed to compute the circumference of a circle?

**Show You
KNOW**

Use what you have learned to compare circles by their characteristics.

1. Draw each circle.

a. radius length of 3 centimeters

b. diameter length of 3 centimeters

2. Describe the similarities and differences between your two circles.

3. Describe the relationship between the circumferences of the two circles.

4. Describe the circumference-to-diameter ratio of all circles.



LESSON 1.1b

Pi: The Ultimate Ratio



Objective

Exploring the Ratio of Circle Circumference to Diameter

Practice

Answer each question. Use 3.14 for π . Round your answer to the nearest hundredth, if necessary.

1. Although she's only in middle school, Tameka loves to drive go-carts! Her favorite place to drive go-carts, Driver's Delight, has 3 circular tracks. Track 1 has a radius of 60 feet. Track 2 has a radius of 85 feet. Track 3 has a radius of 110 feet.

a. Compute the circumference of Track 1.

b. Compute the circumference of Track 2.

c. Compute the circumference of Track 3.

d. Driver's Delight is considering building a new track. They have a circular space with a diameter of 150 feet. Compute the circumference of the circular space.

2. Tameka wants to build a circular go-cart track in her backyard.

a. If she wants the track to have a circumference of 150 feet, what does the radius of the track need to be?

b. If she wants the track to have a circumference of 200 feet, what does the radius of the track need to be?

c. If she wants the track to have a circumference of 400 feet, what does the diameter of the track need to be?

