

NAME _____

Module 9 Characteristics of Geometric Shapes
Lesson 3 Circles

Challenge Problems

9.3

Set 1

1 Use a calculator to find the value of $\frac{22}{7}$ to six decimal places. Using the π key on a calculator, find the value of π rounded to six decimal places. Then, order $\frac{22}{7}$, π , and 3.14 from least to greatest.

2 Explain how to estimate the diameter of a tree trunk if its circumference is 60 inches.

3 Determine if this statement is true or false and explain: If the diameter of a circle is doubled, then the circumference is doubled.

Possible Answers

Set 1

1. $\frac{22}{7} \approx 3.142857$
 $\pi \approx 3.141593$
 $3.14 = 3.140000$

$$3.14 < \pi < \frac{22}{7}$$

2. Use the relationship, circumference divided by diameter equals π . Round the value of π to three. Sixty divided by the diameter is about three. That means that the diameter must be about 20 inches.

$$\frac{C}{d} = \pi \approx 3.14 \approx 3$$

$$\frac{60}{d} \approx 3$$

$$d \approx 20 \text{ inches}$$

3. This statement is true.

Testing with a circle whose diameter is five:

$$C = \pi(5) \approx 15.7$$

$$C = \pi(10) \approx 31.4$$

$$15.7 \times 2 = 31.4$$

Rewriting the formula:

$$C = \pi d$$

$$C = \pi 2d = 2\pi d$$