Finding the area of a circle


National Center and State Collaborative

Parts of a circle

- A circle is the set of all points in a plane that are the same distance from a given point (i.e., the center of the circle)

- The radius is the distance from the center of the circle to any point on the circle

- The diameter is the distance from one point to another point on the circle crossing through the center of the circle

- The circumference of a circle is the distance around the entire circle

radius

diameter

circumference

ncsc

National Center and State Collaborative
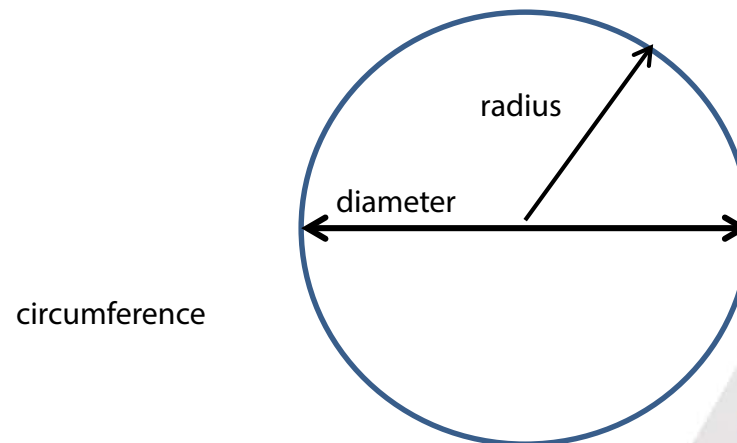
Area of a circle

- The formula for finding the area of a circle is $A = \pi r^2$

- When discussing the formula, the teacher may want to talk about the value for π and that it is a constant. This means the value of π is always the same which equals **<u>approximately</u>** 3.14.

ncsc

National Center and State Collaborative

Finding Area

- Students should begin calculating the area of a circle when the radius is provided.
- For example, what is the area of a circle with a radius of 4.
  - Step 1: Plug numbers into an equation template

$$A = \pi(4)^2$$
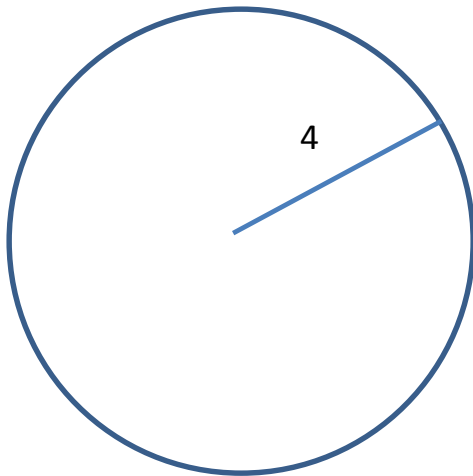
Helpful Hint:
Remember to review order of operations. Students must square r before they multiply by π

4

ncsc

National Center and State Collaborative

Finding Area

- Step 2: Use a calculator to solve for area
  - $A = \pi(16)$
  - $A \approx 50.24 \text{ cm}^2$

Don't forget to label the units

Note the change in symbol to communicate an approximation

- Once students can successfully solve when the radius is provided, begin to give problems where the diameter is provided.
  - In this case the first step becomes dividing the diameter in half to find the radius

ncsc

National Center and State Collaborative

Ideas for application

- Compare the radius and area of various circles. Which one has more area? Does it make it a better price?
  - Small and large pizzas
    - Focus on as radius increases, so does the area of the circle
    - How much bigger is the area of a large pizza compared to a small

ncsc

National Center and State Collaborative

Making Connections

- Finding the area of a circle addresses the following 7th and 8th grade Core Content Connectors
  - 7-8.NO.3c1 Use the rules for mathematical operations to verify the results when more than one operation is required to solve a problem
  - 7.ME.2d1 Apply formula to measure area and circumference of circles
  - 7-8.NO.3c5 Explain each step to solve a problem
  - 8.NO.1k1 Identify π as an irrational number

ncsc
National Center and State Collaborative