Volume of a Sphere

Today's Objective

SWBAT determine the volume of a sphere and how changing the radius or diameter affects it.

THEOREM 6.23: VOLUME OF A SPHERE
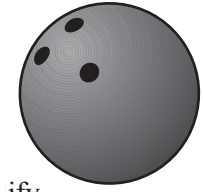
The volume V of a sphere is

$V =$ _____ , where r is the radius

of the sphere.

Example 1

The bowling ball has a diameter of 8 inches. Find the volume

if,

☑ Check for Understanding

The diameter of a sphere is 50 feet. Find the volume of the sphere.

Example 2

A spherical balloon has an initial radius of 5 inches. When more air is added to the balloon, the radius is increased to 10 inches. Explain how the volume of the balloon changes when the radius is doubled. Round your answers to the nearest whole number.
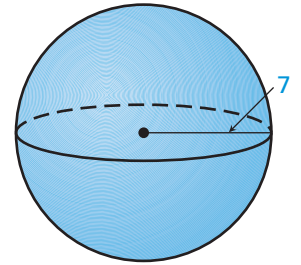
☑ **Check for Understanding**

The original diameter of a sphere is 4 meters. Explain how the volume of the sphere changes if the diameter is halved to 2 meters. Round your answer to the nearest whole number.

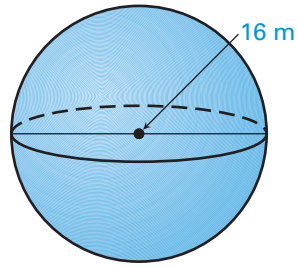1. Find the volume of the sphere. Round your answer to two decimal places.

3. The original radius of a sphere is 6 centimeters. Explain how the volume of the sphere changes if the radius is halved to 3 centimeters. Round your answers to the nearest whole number.

1. Find the volume of the sphere. Round your answer to two decimal places.
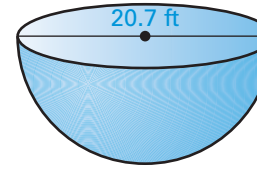
16 m

2. The original diameter of a sphere is 8 inches. Explain how the volume of the sphere changes if the diameter is doubled to 16 inches. Round your answers to the nearest whole number.

1. Find the volume of the hemisphere. Round your answer to two decimal places.

20.7 ft

2. The original diameter of a sphere is 30 feet. Explain how th volume of the sphere changes if the diameter is halved to 15 feet. Round your answers to the nearest whole number.

1. Find the radius of the sphere with the given volume V. Round your answer to two decimal places.

$$V = 64 \ in.^3$$

2. A sphere is inscribed in a cube with side lengths of 3 inches. What is the volume of the sphere?