Math Virtual Learning

Geometry/Honors Geometry

Monday, May 4th

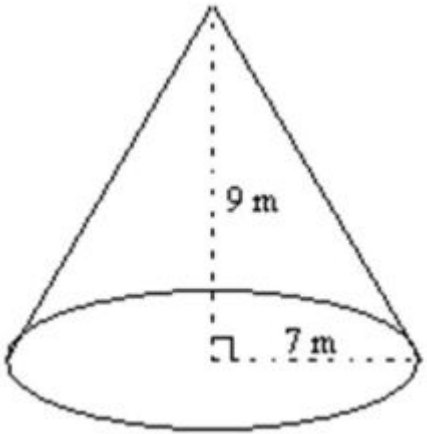
Grade/Course

Lesson: May 1st, 2020

Objective/Learning Target:

Students will calculate the volume of a sphere.

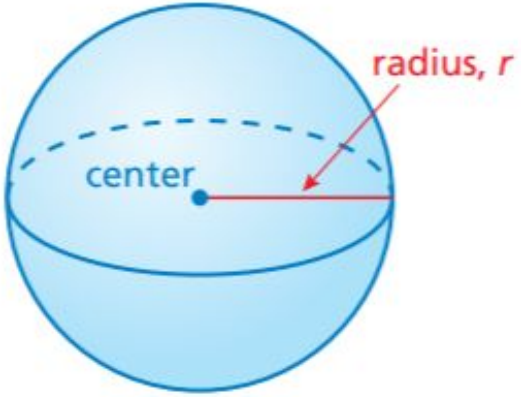
Bell Ringer: Find the volume of the cone.



Warm-Up Answers

147π cubic meters

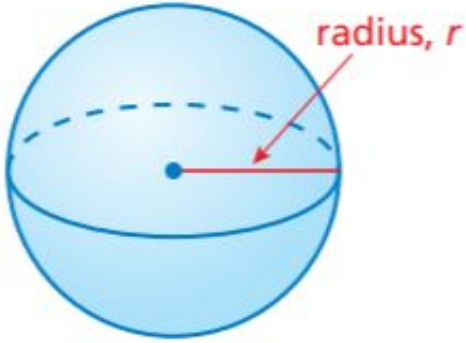
A **sphere** is the set of all points in space that are the same distance from a point called the *center*. The *radius* r is the distance from the center to any point on the sphere.



A sphere is different from the other solids you have studied so far because it does not have a base. To discover the volume of a sphere, you can use an activity similar to the one in the previous section.

Volume of a Sphere

Words The volume V of a sphere is the product of $\frac{4}{3}\pi$ and the cube of the radius of the sphere.

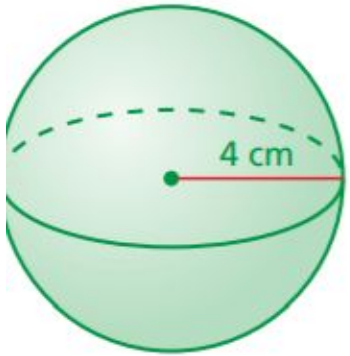


Algebra $V = \frac{4}{3}\pi r^3$

Cube of radius of sphere

EXAMPLE 1 Finding the Volume of a Sphere

Find the volume of the sphere. Round your answer to the nearest tenth.



$$V = \frac{4}{3}\pi r^3$$ Write formula for volume.

$$= \frac{4}{3}\pi (4)^3$$ Substitute 4 for r.

$$= \frac{256}{3}\pi$$ Simplify.

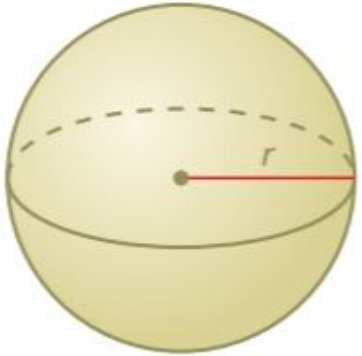
$$\approx 268.1$$ Use a calculator.

∴ The volume is about 268.1 cubic centimeters.

EXAMPLE 2 Finding the Radius of a Sphere

Find the radius of the sphere.

Volume $= 288\pi$ in.^{3}



$$V = \frac{4}{3}\pi r^3$$ Write formula.

$$288\pi = \frac{4}{3}\pi r^3$$ Substitute.

$$288\pi = \frac{4\pi}{3}r^3$$ Multiply.

$$\frac{3}{4\pi} \cdot 288\pi = \frac{3}{4\pi} \cdot \frac{4\pi}{3}r^3$$ Multiplication Property of Equality

$$216 = r^3$$ Simplify.

$$6 = r$$ Take the cube root of each side.

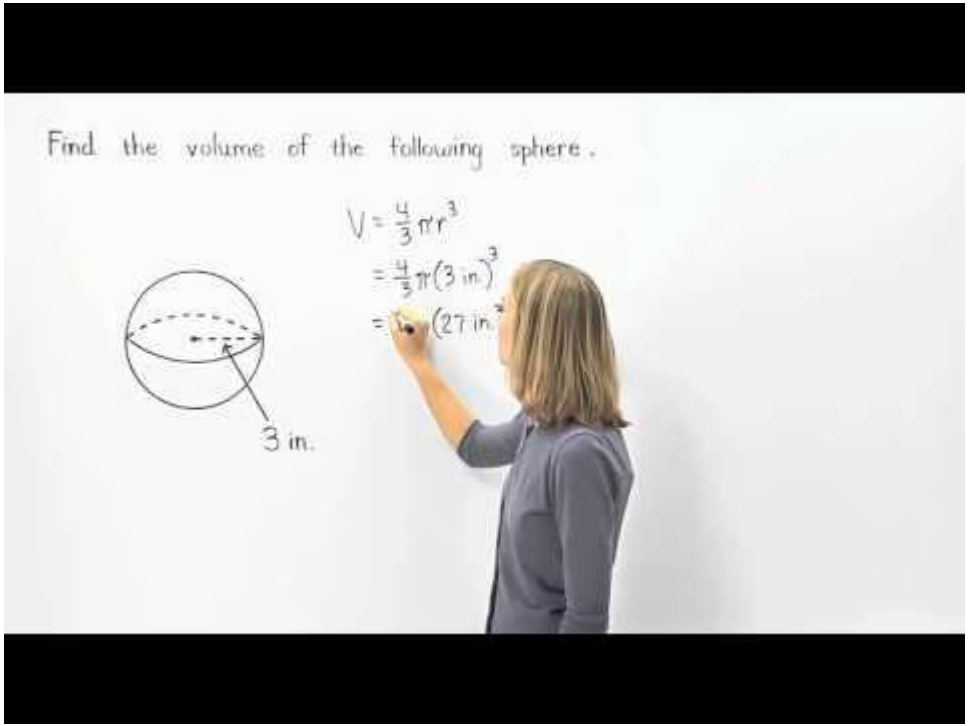
∴ The radius is 6 inches.

Information

Please watch the following

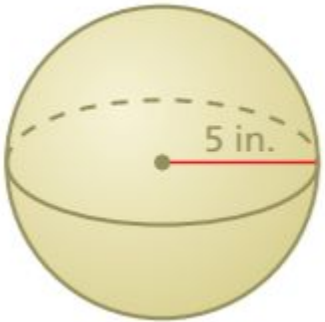
First Video:

Examples of finding the Volume of a sphere.

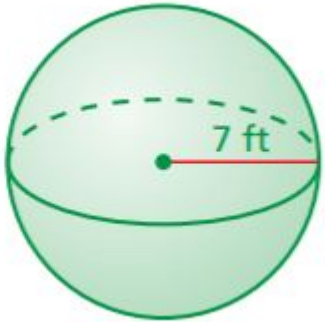


Practice:Find the volume of the sphere

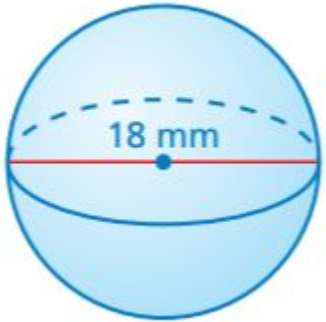
3.



4.



5.



12. **GLOBE** The globe of the Moon has a radius of 10 inches. Find the volume of the globe. Round your answer to the nearest whole number.

Answers

1) $V \approx 523.6$ inches cubed

2) $V \approx 1436.76$ feet cubed

3) $V \approx 3053.63$ millimeter cubed

4) $V \approx 4188.79$ inches cubed

Additional Practice

Khan Academy Practice

Click on the link and practice 10 problems. Look at the explanation if you make a mistake: IXL Volume of sphere