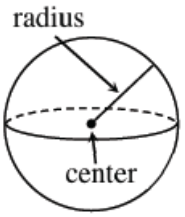
SPHERES – VOLUME

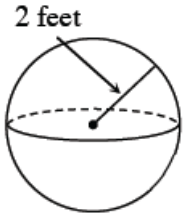
For a sphere with radius r, the volume is found using: $V = \frac{4}{3}\pi r^3$.

For more information, see the Math Notes box in Lesson 10.1.5 of the *Core Connections, Course 3* text.



Example 1

Find the volume of the sphere at right.



$V = \frac{4}{3}\pi\ r^3 = \frac{4}{3}\pi\ 2^3 = \frac{32\pi}{3}\ \text{ft}^3$ exact answer

or using $\pi \approx 3.14$

$\frac{32(3.14)}{3} \approx 33.49\ \text{ft}^3$ approximate answer

Problems

Use the given information to find the exact and approximate volume of the sphere.

1. radius = 10 cm
2. radius = 4 ft
3. diameter = 10 cm
4. diameter = 3 miles
6. circumference of great circle = 12π
6. circumference of great circle = 3π

Use the given information to answer each question related to spheres.

7. If the radius is 7 cm, find the volume.
8. If the diameter is 10 inches, find the volume.

Answers

1. $\frac{4000\pi}{3} \approx 4186.67 \text{ cm}^3$
2. $\frac{256\pi}{3} \approx 267.94 \text{ ft}^3$
3. $\frac{500\pi}{3} \approx 523.33 \text{ cm}^3$
4. $\frac{9\pi}{2} \approx 14.13 \text{ mi}^3$
5. $288\pi \approx 904.32 \text{ un}^3$
6. $\frac{9\pi}{2} \approx 14.13 \text{ un}^3$
7. $\frac{1372\pi}{3} \approx 1436.75 \text{ cm}^3$
8. $\frac{500\pi}{3} \approx 523.60 \text{ in.}^3$
9. $r = 3$ units
10. $r = 4$ units