Surface Area and Volume of Spheres

Lesson 12-6

CCSS

You will be able to find the surface area and volume of spheres.

Great Circle

Same radius
of sphere

r
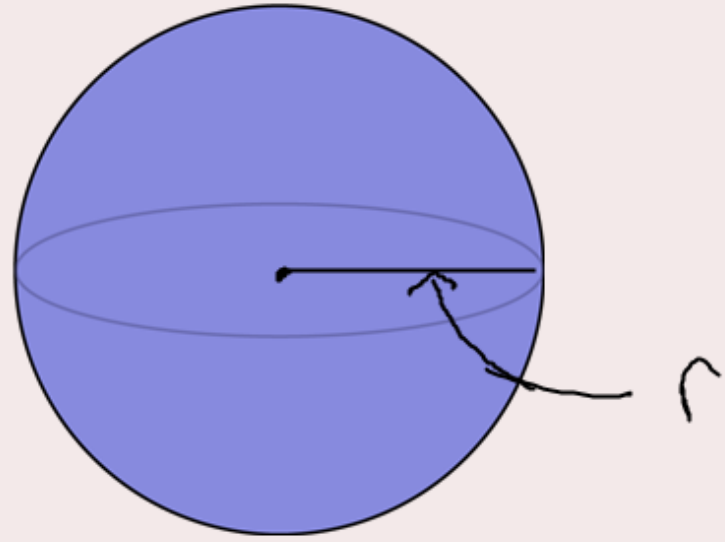
Hemisphere

↳ half of a sphere

	Surface Area	Volume
Sphere 	$T = 4\pi r^2$	$V = \frac{4}{3}\pi r^3$
	$T = 3\pi r^2$	$V = \frac{2}{3}\pi r^3$

Hemisphere

$$V = \frac{4}{3}\pi r^3 \cdot \frac{1}{2} = \frac{2}{3}\pi r^3$$

NAME _____ DATE _____ PERIOD _____
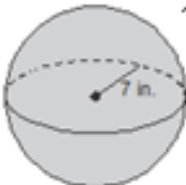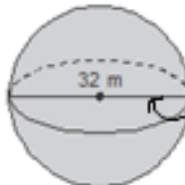
12-6 Skills Practice

Surface Areas and Volumes of Spheres

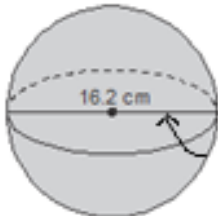Find the surface area of each sphere or hemisphere. Round to the <u>nearest tenth</u>.

1.

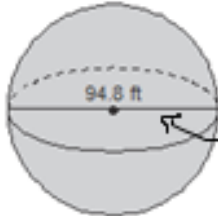$T = 4\pi r^2$
$T = 4\pi (7)^2$
$T = 615.8 \text{ in}^2$

7 in.

2.

$T = 4\pi r^2$
$T = 4\pi (16)^2$
$r = 16$ $T = 3216.9 \text{ m}^2$
$T = 3217.0 \text{ m}^2$

32 m

3. hemisphere: radius of great circle = 8 yd $T = 3\pi r^2$
$r =$ $T = 3\pi (8)^2$

4. sphere: area of (great circle) = 28.6 in² $T = 4\pi r^2$ $T = 4\pi (3)^2$
$\dfrac{\pi r^2}{\pi} = \dfrac{28.6}{\pi}$ $r^2 = 9.1$ $r = 3$ $T = 113.1 \text{ in}^2$

Find the volume of each sphere or hemisphere. Round to the nearest tenth.

5.

16.2 cm

$V = \frac{4}{3}\pi r^3$
$V = \frac{4}{3}\pi (8.1)^3$
$r = 8.1$ $V = 2226.1 \text{ cm}^3$

6.

94.8 ft

$V = \frac{4}{3}\pi r^3$
$V = \frac{4}{3}\pi (47.4)^3$
47.4
$V = 446091.2 \text{ ft}^3$

7. hemisphere: diameter = 48 yd $V = \frac{2}{3}\pi r^3$
$\downarrow$
$r = 24$ $V = \frac{2}{3}\pi (24)^3$
$V = 28,952.9$

8. sphere: circumference of a great circle = 26 m $C = 2\pi r$
$V = \frac{4}{3}\pi r^3$ $\dfrac{26}{2\pi} = \dfrac{2\pi r}{2\pi}$
$V = 288.7$ $V = \frac{4}{3}\pi (4.1)^3$ $4.1 = r$

9. sphere: diameter = 10 in. $26/(2\pi)$

Chapter 12   39   Glencoe Geometry

Lesson 12-6