

Reteaching: Section 13-5

Surface Areas and Volumes of Spheres

Problem

What are the surface area and volume of the sphere?

Substitute $r = 5$ into each formula, and simplify.

$$\text{S.A.} = 4\pi r^2$$

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

$$= 4\pi(5)^2$$

$$= \frac{4}{3}\pi(5)^3$$

$$= 100\pi$$

$$= \frac{500\pi}{3}$$

$$\approx 314.2$$

$$\approx 523.6$$



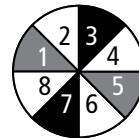
The surface area of the sphere is about 314.2 in.². The volume of the sphere is about 523.6 in.³.

Exercises

Use the figures at the right to guide you in completing the following.

1. Use a compass to draw two circles, each with radius 3 in.

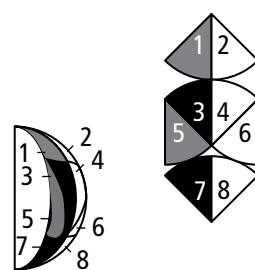
Cut out each circle.



2. Fold one circle in half three successive times. Number the central angles 1 through 8.

3. Cut out the sectors, and tape them together as shown.

4. Take the other circle, fold it in half, and tape it to the rearranged circle so that they form a quadrant of a sphere.



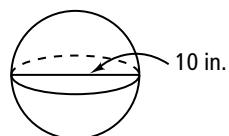
5. The area of one circle has covered one quadrant of a sphere. How many circles would cover the entire sphere?

6. How is the radius of the sphere related to the radius of the circle?

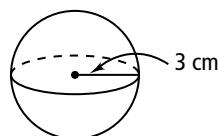
Find the volume and surface area of a sphere with the given radius or diameter.

Round your answers to the nearest tenth.

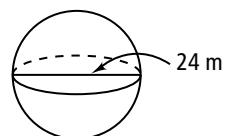
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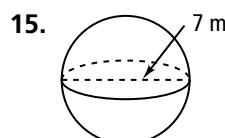
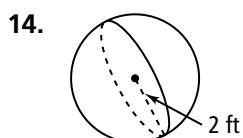
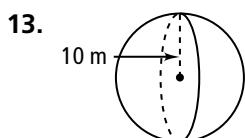
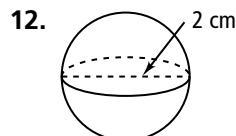
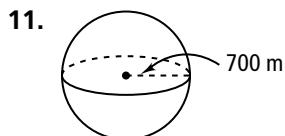
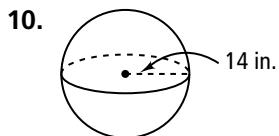


8.



9.



Reteaching (continued)**Surface Areas and Volumes of Spheres****Find the volume and surface area of the sphere. Round to the nearest tenth.****A sphere has the volume given. Find its surface area to the nearest whole number.**

16. 1436.8 mi^3

17. 808 cm^3

18. 72 m^3

Find the volume of each sphere with the given surface area. Round to the nearest whole number.

19. 435 yd^2

20. 907 cm^2

21. 28 m^2

22. **Visualization** The region enclosed by the semicircle at the right is revolved completely about the x -axis.

- Describe the solid of revolution that is formed.
- Find its volume in terms of π .
- Find its surface area in terms of π .

23. The sphere at the right fits snugly inside a cube with 18 cm edges. What is the volume of the sphere? What is the surface area of the sphere? Leave your answers in terms of π .

