

Name:

Key

Date:

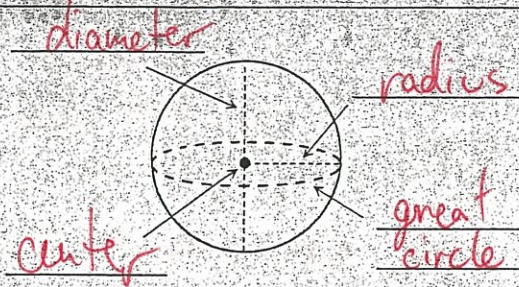
Topic:

Class:

Main Ideas/Questions

Notes/Examples

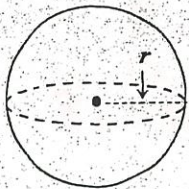
### Parts of a Sphere



A sphere is a solid in which each point is equidistant from a center point.

The **great circle** slices the sphere into two **hemispheres**.

### Volume & Surface Area of a Sphere

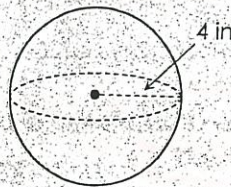


$$V = \frac{4}{3} \pi r^3$$

$$SA = 4 \pi r^2$$

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

1.



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

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

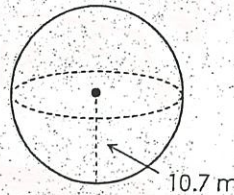
$$V = \frac{4}{3} \pi 64$$

$$V = \frac{256}{3} \pi$$

$$V = 268.1 \text{ in}^3$$

$$\begin{array}{r} 1 \\ 64 \\ \times 4 \\ \hline 256 \end{array}$$

2.



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

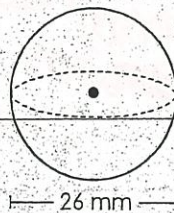
$$V = \frac{4}{3} \pi (10.7)^3$$

$$V = \frac{4}{3} \pi (1225.043)$$

$$V = \frac{4900.172}{3} \pi$$

$$V = 5131.4 \text{ m}^3$$

3.



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

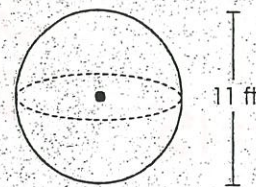
$$V = \frac{4}{3} \pi (13)^3$$

$$V = \frac{4}{3} \pi 2197$$

$$V = \frac{8789}{3} \pi$$

$$V = 9202.8 \text{ mm}^3$$

4.



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

$$V = \frac{4}{3} \pi (11)^3$$

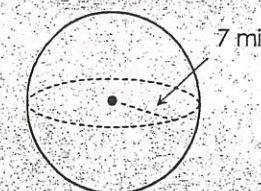
$$V = \frac{4}{3} \pi (1331)$$

$$V = \frac{665.5}{3} \pi$$

$$V = 696.9 \text{ ft}^3$$

Find the surface area of each sphere. Round to the nearest tenth.

5.



$$SA = 4 \pi r^2$$

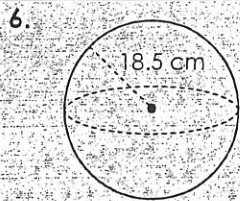
$$SA = 4 \pi (7)^2$$

$$SA = 4 \pi 49$$

$$SA = 196 \pi$$

$$SA = 615.8 \text{ mi}^2$$





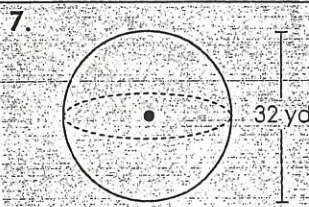
$$SA = 4\pi r^2$$

$$SA = 4\pi(18.5)^2$$

$$SA = 4\pi(342.5)$$

$$SA = 1369\pi$$

$$SA = 4300.8 \text{ cm}^2$$



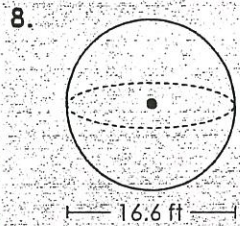
$$SA = 4\pi r^2$$

$$SA = 4\pi(16)^2$$

$$SA = 4\pi(256)$$

$$SA = 1024\pi$$

$$SA = 3217 \text{ yd}^2$$



$$SA = 4\pi r^2$$

$$SA = 4\pi(8.3)^2$$

$$SA = 4\pi(68.89)$$

$$SA = 275.96\pi$$

$$SA = 865.7 \text{ ft}^2$$

## Applications

9. Find the length of the diameter of a sphere with a surface area of 1,017.88 square millimeters.

$$SA = 4\pi r^2$$

$$\frac{1017.88}{4} = \frac{4\pi r^2}{4}$$

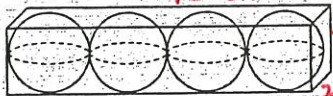
$$254.47 = \pi r^2$$

$$\frac{254.47}{\pi} = \frac{\pi r^2}{\pi}$$

$$r^2 = 81$$

$$r = 9$$

$$d = 18$$



$$\begin{array}{r} 2 \\ 25 \\ \times 10.0 \\ \hline 49910 \\ 50000 \\ - 26100 \\ \hline 23800 \end{array}$$

10. Four glass balls, each with a 2.5 inch radius, are placed in a box. If the remaining space is to be filled with cotton for padding, how much cotton is needed?

$$V = lwh$$

$$V = 10(2.5)(2.5)$$

$$V = 62.5$$

$$V = 4\pi r^3$$

$$V = 4\pi(2.5)^3$$

$$V = 65.4 \times 4$$

$$V = 261.8$$

$$238.2 \text{ in}^3 \text{ in cotton}$$

11. A standard basketball has a circumference of 94.25 inches. How much leather material was used to make the basketball?

$$C = 2\pi r$$

$$\frac{94.25}{2} = \frac{2\pi r}{2}$$

$$47.125 = \pi r$$

$$\frac{47.125}{\pi} = \frac{\pi r}{\pi}$$

$$r = 15$$

$$SA = 4\pi r^2$$

$$SA = 4\pi(15)^2$$

$$SA = 4\pi(225)$$

$$SA = 900\pi$$

$$SA = 2827.4 \text{ in}^2$$



12. Find the volume of the solid to the left if the cone has a diameter of 6 feet and a height of 11 feet.

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

$$V = \frac{1}{3}\pi(3)^2(11)$$

$$V = \frac{108}{3}\pi$$

$$V = 113.1$$

$$V = 103.7$$

$$V = 160.2 \text{ ft}^3$$

$$V = 33\pi$$

$$V = 103.7$$