

Surface Area of Spheres Notes

Surface area of a sphere: $S = 4\pi r^2$

Find the surface area of each sphere with the given radius or diameter to the nearest tenth.

1. $r = 8 \text{ cm}$

$$4\pi(8^2) = 804.2 \text{ cm}^2$$

4. $d = 10 \text{ in.}$

$$4\pi(5^2) = 314.2 \text{ in}^2$$

2. $r = 2\sqrt{2}$

$$4\pi(2\sqrt{2})^2 = 100.5 \text{ units}^2$$

5. $d = 6\pi \text{ m}$

$$4\pi(3\pi)^2 = 1116.2 \text{ m}^2$$

3. $r = \pi \text{ cm}$

$$4\pi(\pi^2) = 124.03 \text{ cm}^2$$

6. $d = 16 \text{ yd}$

$$4\pi(8^2) = 804.2 \text{ yd}^2$$

7. Find the surface area of a hemisphere with radius 12 centimeters.

$$S = \frac{4\pi r^2}{2} + \pi r^2 = \frac{4\pi(12)^2}{2} + \pi(12)^2 = 904.8 + 452.4 = 1356.4 \text{ cm}^2$$

8. Find the surface area of a hemisphere with diameter π centimeters.

$$\frac{4\pi(\pi/2)^2}{2} + \pi(\pi/2)^2 = 31.01 + 7.75$$

$$15.5 + 7.75 = 23.26 \text{ cm}^2$$

9. Find the radius of a sphere if the surface area of a hemisphere is 192π square centimeters.

$$\frac{4\pi r^2}{2} + \frac{2\pi r^2}{2} = 192\pi$$

$$\frac{6\pi r^2}{2} = 192\pi$$

$$6\pi r^2 = 384\pi$$

$$r^2 = 64$$

$$r = 8$$