

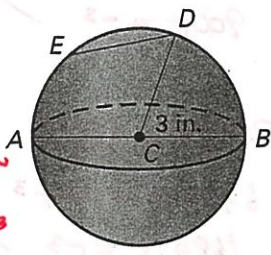
Practice A

For use with pages 759-765




$S.A. = 4\pi r^2 \quad V = \frac{4\pi r^3}{3}$

Use the diagram at the right.

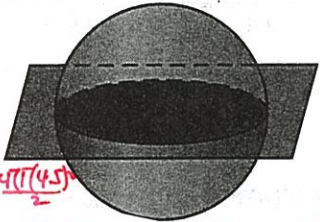
- Name a chord of the sphere. ED
- Name a segment that is a radius of the sphere. AC or CB
- Name a segment that is a diameter of the sphere. AB
- Find the circumference of the great circle that contains A and B. 6π in
- Find the surface area of the sphere. $S.A. = 4\pi(3)^2$
 $S.A. = 36\pi \text{ in}^2$
- Find the volume of the sphere. $V = \frac{4\pi(3)^3}{3}$
 $V = 36\pi \text{ in}^3$



Find the surface area of the sphere. Find Volume. LEAVE IN π .




<p>7. </p> <p>$S.A. = 4\pi(4)^2 = 8.$ $S.A. = 64\pi \text{ cm}^2$ $V = \frac{4\pi(4)^3}{3}$ $V = \frac{256\pi}{3} \text{ cm}^3$</p>	<p>8. </p> <p>$S.A. = 4\pi(5.5)^2$ $S.A. = \frac{121\pi}{4} \text{ in}^2$ $V = \frac{4\pi(5.5)^3}{3}$ $V = \frac{665.5\pi}{3} \text{ in}^3$</p>	<p>9. </p> <p>$r = 6 \text{ cm}$ $S.A. = 4\pi(6)^2$ $S.A. = 144\pi \text{ cm}^2$ $V = \frac{4\pi(6)^3}{3}$ $V = 288\pi \text{ cm}^3$</p>
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In Exercises 10-13, use the diagram at the right. The center of the sphere is C and its circumference is 9π inches.

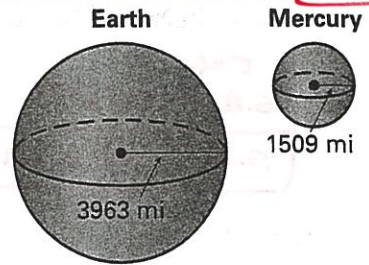


- What is half of the sphere called? HEMISPHERE
- Find the radius of the sphere. $C = 9\pi$
 $9\pi = 2\pi r$
 $4.5 \text{ in} = r$
- Find the diameter of the sphere. $D = 9 \text{ in}$
- Find the surface area of half the sphere. $S.A. = \frac{4\pi(4.5)^2}{2}$
 $S.A. = 40.5\pi + \pi(4.5)^2 \rightarrow S.A. = 60.75\pi \text{ in}^2$

Find the volume of the sphere. Find SURFACE AREA. LEAVE IN π .

<p>14. </p> <p>$S.A. = 4\pi(7)^2$ $S.A. = 196\pi \text{ in}^2$ $V = \frac{4\pi(7)^3}{3}$ $V = \frac{1372\pi}{3} \text{ in}^3$</p>	<p>15. </p> <p>$S.A. = 4\pi(5.1)^2$ $S.A. = 104.04\pi \text{ cm}^2$ $V = \frac{4\pi(5.1)^3}{3}$ $V = 176.868\pi \text{ cm}^3$</p>	<p>16. </p> <p>$S.A. = 4\pi(1.25)^2$ $S.A. = 6.25\pi \text{ in}^2$ $V = \frac{4\pi(1.25)^3}{3}$ $V = \frac{7.8125\pi}{3} \text{ in}^3$</p>
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17. **Earth and Mercury** The mean radius of Earth is approximately 3963 miles. The mean radius of Mercury is 1509 miles. How does the surface area of Mercury compare to the surface area of Earth?



$S.A._{\text{Earth}} = 4\pi(3963)^2 = 62821476\pi \text{ m}^2$

$S.A._{\text{Mercury}} = 4\pi(1509)^2 = 9108324\pi \text{ m}^2$

$53713152\pi \text{ m}^2$

Section 12.6

1. What is radius of a sphere if its volume is $1200\pi \text{ ft}^3$?

$$1200\pi = \frac{4\pi r^3}{3}$$

$$\Rightarrow 600\pi = 4\pi r^3$$

$$900 = r^3$$

$$\sqrt[3]{900} = \sqrt[3]{r^3}$$

$$\boxed{9.7 \text{ ft} \approx r}$$

2. The volume of a hemisphere is $2250\pi \text{ cm}^3$. What is the radius of the hemisphere?

$$2250\pi = \frac{4\pi r^3}{3}$$

$$6750\pi = 4\pi r^3$$

$$1687.5 = r^3$$

$$\sqrt[3]{1687.5} = \sqrt[3]{r^3}$$

$$\boxed{11.9 \text{ cm} = r}$$

3. A basketball is a sphere with a diameter of 9 inches. What is the surface area and volume of a basketball?

$$r = 4.5 \text{ in}$$

$$\text{S.A.} = 4\pi(4.5)^2$$

$$\boxed{\text{S.A.} = 81\pi \text{ in}^2}$$

$$V = \frac{4\pi(4.5)^3}{3}$$

$$\boxed{V = 121.5\pi \text{ in}^3}$$

As an exercise in for her art class, Mona has cast a plastic cube 12 cm on each side. Her assignment is to carve away the largest sphere as possible from the cube. Answer each part of the question.

4. What is the volume of the plastic cube?

$$V = (12 \cdot 12) \cdot 12$$

$$\boxed{V = 1728 \text{ cm}^3}$$

5. What is the volume of the sphere?

$$r = 6 \text{ cm}$$

$$V = \frac{4\pi(6)^3}{3}$$

$$\boxed{V = 288\pi \text{ cm}^3}$$

6. What is the surface area of the sphere she will create?

$$r = 6$$

$$\text{S.A.} = 4\pi(6)^2$$

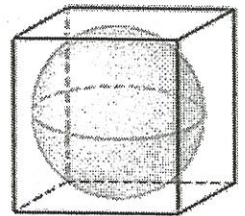
$$\boxed{\text{S.A.} = 144\pi \text{ cm}^2}$$

7. How much material does she need to remove to create the sphere from the cube?

$$V_{\text{CUBE}} = 1728 \text{ cm}^3$$

$$V_{\text{SPHERE}} = 288\pi \approx 904.32 \text{ cm}^3$$

$$\boxed{823.68 \text{ cm}^3}$$



12 cm