

**G.G.16: Volume and Surface Area: Apply the properties of a sphere, including the surface area formula**

- 1 The diameter of a sphere is 15 inches. What is the volume of the sphere, to the *nearest tenth of a cubic inch*?
  - 1) 706.9
  - 2) 1767.1
  - 3) 2827.4
  - 4) 14,137.2
- 2 The diameter of a sphere is 12 inches. What is the volume of the sphere to the *nearest cubic inch*?
  - 1) 288
  - 2) 452
  - 3) 905
  - 4) 7,238
- 3 The volume, in cubic centimeters, of a sphere whose diameter is 6 centimeters is
  - 1)  $12\pi$
  - 2)  $36\pi$
  - 3)  $48\pi$
  - 4)  $288\pi$
- 4 A sphere is inscribed inside a cube with edges of 6 cm. In cubic centimeters, what is the volume of the sphere, in terms of  $\pi$ ?
  - 1)  $12\pi$
  - 2)  $36\pi$
  - 3)  $48\pi$
  - 4)  $288\pi$
- 5 A sphere has a diameter of 18 meters. Find the volume of the sphere, in cubic meters, in terms of  $\pi$ .
- 6 The volume of a sphere is approximately 44.6022 cubic centimeters. What is the radius of the sphere, to the *nearest tenth of a centimeter*?
  - 1) 2.2
  - 2) 3.3
  - 3) 4.4
  - 4) 4.7
- 7 Tim is going to paint a wooden sphere that has a diameter of 12 inches. Find the surface area of the sphere, to the *nearest square inch*.
- 8 The diameter of a sphere is 5 inches. Determine and state the surface area of the sphere, to the *nearest hundredth of a square inch*.
- 9 If the surface area of a sphere is  $144\pi$  square centimeters, what is the length of the diameter of the sphere, in centimeters?
  - 1) 36
  - 2) 18
  - 3) 12
  - 4) 6
- 10 If the surface area of a sphere is represented by  $144\pi$ , what is the volume in terms of  $\pi$ ?
  - 1)  $36\pi$
  - 2)  $48\pi$
  - 3)  $216\pi$
  - 4)  $288\pi$

**G.G.16: Volume and Surface Area: Apply the properties of a sphere, including the surface area formula****Answer Section**

1 ANS: 2

$$V = \frac{4}{3} \pi r^3 = \frac{4}{3} \pi \cdot \left( \frac{15}{2} \right)^3 \approx 1767.1$$

REF: 061207ge

2 ANS: 3

$$V = \frac{2}{3} \pi \left( \frac{12}{2} \right)^3 \approx 905$$

REF: 061502ge

3 ANS: 2

$$V = \frac{4}{3} \pi r^3 = \frac{4}{3} \pi \cdot 3^3 = 36\pi$$

REF: 061112ge

4 ANS: 2

$$V = \frac{4}{3} \pi r^3 = \frac{4}{3} \pi \cdot \left( \frac{6}{2} \right)^3 \approx 36\pi$$

REF: 081215ge

5 ANS:

$$V = \frac{4}{3} \pi \cdot 9^3 = 972\pi$$

REF: 081131ge

6 ANS: 1

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

$$44.6022 = \frac{4}{3} \pi r^3$$

$$10.648 \approx r^3$$

$$2.2 \approx r$$

REF: 061317ge

7 ANS:

$$452. \ SA = 4\pi r^2 = 4\pi \cdot 6^2 = 144\pi \approx 452$$

REF: 061029ge

8 ANS:

$$SA = 4\pi r^2 = 4\pi \cdot 2.5^2 = 25\pi \approx 78.54$$

REF: 011429ge

9 ANS: 3

$$144\pi = 4\pi r^2$$

$$36 = r^2$$

$$6 = r$$

REF: 061415ge

10 ANS: 4

$$SA = 4\pi r^2 \quad V = \frac{4}{3}\pi r^3 = \frac{4}{3}\pi \cdot 6^3 = 288\pi$$

$$144\pi = 4\pi r^2$$

$$36 = r^2$$

$$6 = r$$

REF: 081020ge