Math 10

Lesson 6-6 Answers

Lesson Questions

Question 1

$$r = \frac{d}{2} = \frac{4}{2} = 2$$

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

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

$$SA = \mathbf{50\,in.^2}$$

Question 2

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

$$250 = 4\pi r^2$$

$$\frac{250}{4\pi} = r^2$$

$$\sqrt{\frac{250}{4\pi}} = r$$

$$4.46\,\text{in.} = r$$

$$d = 2r$$

$$d = 2(4.46\,in.)$$

$$\text{d} = \mathbf{8.9\,in.}$$

Question 3

$$r = \frac{d}{2}$$

$$r = \frac{2160}{2}$$

$$r = 1080$$

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

$$V = \frac{4\pi(1080)^3}{3}$$

$$V = \mathbf{5.3 \times 10^9\,mi.^3}$$

Question 4

A hemisphere is half a sphere with a circular lid.

$$SA = \frac{1}{2}4\pi r^2 + \pi r^2$$

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

$$SA = 3\pi r^2$$

$$SA = 3\pi(5.0)^2$$

$$SA = \mathbf{235.6\,cm^2}$$

$$V = \frac{1}{2}\frac{4\pi r^3}{3}$$

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

$$V = \frac{2\pi(5.0)^3}{3}$$

$$V = \mathbf{261.8\,cm^3}$$

Assignment

1. a) 314 cm^2 b) 32 m^2
   c) 201 $ft.^2$ d) 99 cm^2

2. a) 524 cm^3 b) 17 m^3
   c) 268 $ft.^3$ d) 92 cm^3

3. a) 339 m^2, 452 m3 b) 191 $yd.^2$, 191 $yd.^3$

4. 3.2 cm

5. a) Hemisphere b) Hemisphere

6. a) 511 185 933 km^2
   b) 357 830 153 km^2
   c) 1 086 781 293 000 km^3
   d) 1 078 037 876 000 km^3

7. 239 spheres

8. a) 11 cm; 5 in. b) 1387 cm^2; 268 $in.^2$ c) 4855 cm^3; 412 $in.^3$ d) Basketball

9. a) Approximately 69%
   b) Assumptions: Ball is created from one solid piece and has greatest possible diameter.

10. Approximately 5 in.

11. a) Inflated balloon's circumference is 3 times as great
    b) Inflated balloon's surface area is 9 times as great
    c) Inflated balloon's volume is 27 times as great