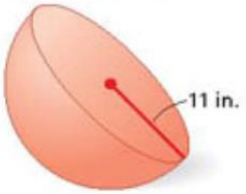
Day 5 Volume of Spheres HW
pg. 770: 2-4, 13, 15, 24, 26

Find each measurement. Give your answers in terms of π.

2. the volume of the hemisphere

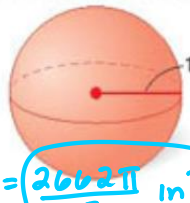


$V = \frac{4\pi r^3}{3}$

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

$= \frac{5324\pi}{3} \div 2 = \frac{2662\pi}{3}$ in^3

3. the volume of the sphere



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

$= \frac{4\pi(1)^3}{3}$

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

4. the radius of a sphere with volume 288π cm^3

$V = \frac{4\pi r^3}{3} \rightarrow 3 \cdot 288\pi = \frac{4\pi r^3}{3} \cdot 3$

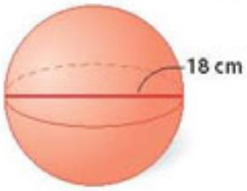
$864\pi = 4\pi r^3$

$\sqrt[3]{216} = \sqrt[3]{r^3}$ ← what # mult by itself 3 times gives you 216? 6 ☺

$r = 3$ cm

Find each measurement. Give your answers in terms of π.

13. the volume of the sphere

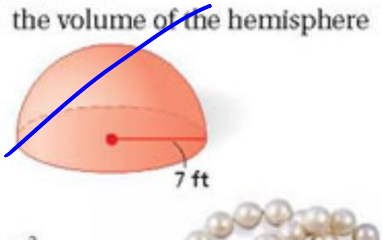


$V = \frac{4\pi r^3}{3}$

$= \frac{4\pi(9)^3}{3}$

$= 1{,}188\pi$ cm^3

14. the volume of the hemisphere



15. the diameter of a sphere with volume 7776π in^3

$V = \frac{4\pi r^3}{3} \rightarrow 3 \cdot 7776\pi = \frac{4\pi r^3}{3} \cdot 3$

$23{,}328\pi = 4\pi r^3$

$\sqrt[3]{5832} = \sqrt[3]{r^3}$

$18 = r$

$d = 36$ in

24. Find the radius of a hemisphere with a volume of 144π cm^3.

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

$3 \cdot 288\pi = \frac{4\pi r^3}{3} \cdot 3$

$864\pi = 4\pi r^3$

$216 = r^3$

so $r = 6$ cm

of hemisphere $\times 2$ 288π

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

$144\pi = \frac{2\pi r^3}{3}$

$432\pi = 2\pi r^3 \rightarrow 216 = r^3$ so $r = 6$ cm

26. Find the volume of a sphere with a circumference of 36π ft.

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

$= \frac{4\pi(18)^3}{3}$

$V = 7{,}776\pi$ ft^3

$C = \pi d$

$36\pi = \pi d$

$36 = d$

so $r = 18$

35. How many times as great is the volume of Jupiter as the volume of Earth?

Planet	Diameter (mi)
Mercury	3,032
Venus	7,521
Earth	7,926
Mars	4,222
Jupiter	88,846
Saturn	74,898
Uranus	31,763
Neptune	30,775

$V_{Jup} = \frac{4\pi r^3}{3} = \frac{4\pi(44{,}423)^3}{3} \approx 367{,}208{,}108{,}073{,}428$ mi^3

$V_{Earth} = \frac{4\pi r^3}{3} = \frac{4\pi(3963)^3}{3} \approx 260{,}711{,}882{,}973.32$

About 1408 times as great!