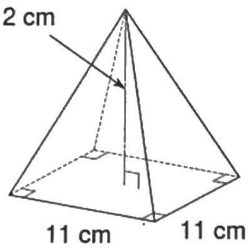
Pyramids

$$V = \frac{1}{3}Bh$$ (B = area of the base)

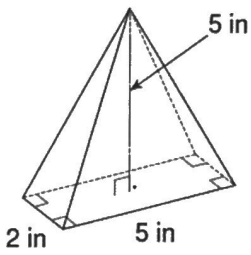
19)



$V = \frac{(11)(11)(12)}{3} = \frac{1452}{3}$

$V = 484\,cm^3$

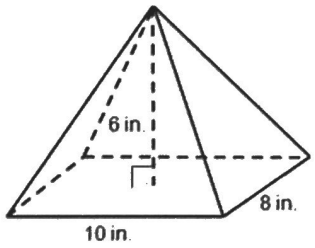
20)



$V = \frac{(2)(5)(5)}{3} = \frac{50}{3}$

$V = \frac{50}{3}\,in^3 \approx 16.7\,in^3$

21)



$V = \frac{(10)(8)(6)}{3} = \frac{480}{3}$

$V = 160\,in^3$

22) A square pyramid has a volume of 512 cm³. If the length and width of the base is 8 cm, find it's height.

$V = \frac{l \cdot w \cdot h}{3}$

$3512 = \frac{(8)(8)h}{3} \cdot 3$

$\frac{1536}{64} = \frac{64h}{64}$

$h = 24\,cm$

23) A rectangular pyramid has a height of 8.5 ft and a volume of 138.83 ft³. What is the area of its base? $(L \cdot w)$

$V = \frac{l \cdot w \cdot h}{3}$

$3 \cdot 138.83 = \frac{l \cdot w (8.5)}{3} \cdot 3$

$\frac{416.49}{8.5} = \frac{l \cdot w (8.5)}{8.5}$

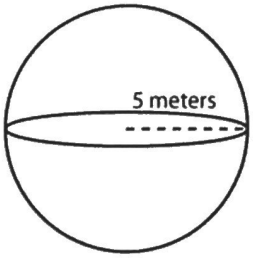
$A = 49\,ft^2$

$A = L \cdot w \approx 48.998$

Spheres

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

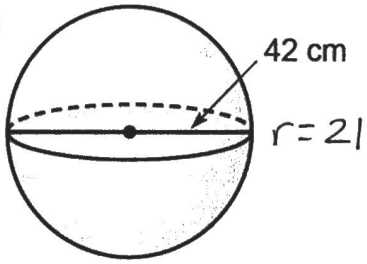
24)



$V = \frac{4}{3}\pi (5)^3$

$V = \frac{500\pi}{3}\,m^3$

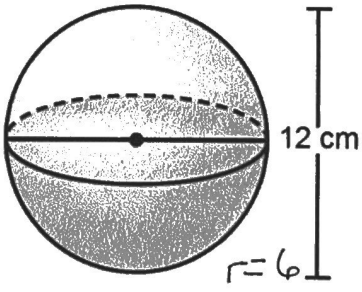
25)



$V = \frac{4}{3}\pi (21)^3$

$V = 12,348\,cm^3$

26)



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

$V = 288\pi\,cm^3$

27) The volume of a basketball is 448.92 in^3. What is the length of its radius?

$V = \frac{4}{3}\pi r^3$ $\quad 3 \cdot 448.92 = \frac{4}{3}\pi r^3 \cdot 3$

$\frac{1346.76}{\pi} = \frac{4\pi r^3}{\pi}$ $\quad \frac{428.69}{4} = \frac{4r^3}{4}$ $\quad \sqrt[3]{107.17} = \sqrt[3]{r^3}$

$r \approx 4.75$ in

28) The volume of a baseball is 12.77 in^3. What is its diameter?

$3 \cdot 12.77 = \frac{4}{3}\pi r^3 \cdot 3$

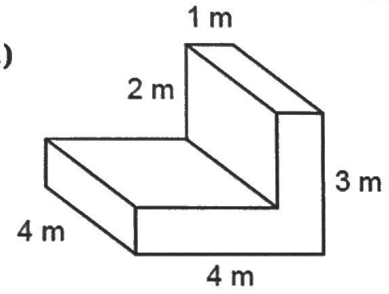
$\frac{38.31}{\pi} = \frac{4\pi r^3}{\pi}$ $\quad \frac{12.19}{4} = \frac{4r^3}{4}$ $\quad \sqrt[3]{3.05} = \sqrt[3]{r^3}$ $\quad r \approx 1.45$

$d = 2(1.45) \approx 2.9$ in

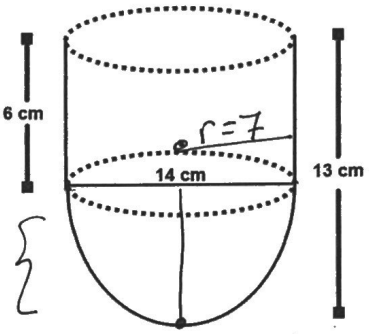
BONUS VOLUME PROBLEMS

If you are feeling pretty confident in finding volume of these solids, try out some of these. If you can complete these, you will have the opportunity to take a bonus quiz that will include similar volume problems.

***1)**



***2)**



$13 - 6 = 7$

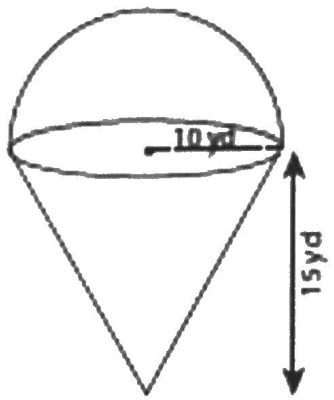
$V_{cylinder} = \pi r^2 h = \pi(7)^2(6) = 294\pi$

$V_{hemisphere} = \frac{\frac{4}{3}\pi r^3}{2} = \frac{\frac{4}{3}\pi(7)^3}{2} = \frac{686}{3}\pi$ (+)

Exact $\frac{1568}{3}\pi$ cm^3

≈ 1642.01 cm^3 Approx.

***3)**



$V_{hemisphere} = \frac{\frac{4}{3}\pi(10)^3}{2} = \frac{2000}{3}\pi$

$V_{cone} = \frac{1}{3}\pi r^2 h$

$\frac{1}{3}\pi(10)^2(15) = 500\pi$ (+)

$\frac{3500}{3}\pi$ yd.^{3} Exact ≈ 3665.19 yd.^{3} Approx.