

1. Calculate the surface area of each object, to the nearest square unit.

a) a rectangular pyramid

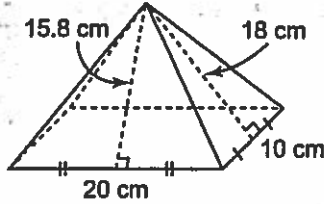
$$\frac{bh}{2} = \frac{(15.8)(20)}{2}$$

$$= 158 \text{ cm}^2$$

$$\frac{bh}{2} = \frac{(18)(10)}{2}$$

$$= 90 \text{ cm}^2$$

$$20 \times 10 = 200 \text{ cm}^2$$

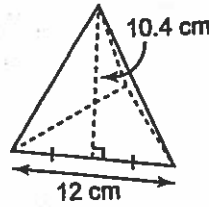


SA

$$\begin{array}{r} 158 \\ 158 \\ 90 \\ 90 \\ + 200 \\ \hline 696 \text{ cm}^2 \end{array}$$

b) a tetrahedron

$$\frac{bh}{2} = \frac{(10.4)(12)}{2} = 62.4 \text{ cm}^2$$



$$4 \times 62.4 = 249.6 \text{ cm}^2$$

2. Calculate the slant height of this cone, to the nearest tenth of a unit.

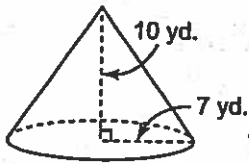
$$a^2 + b^2 = c^2$$

$$10^2 + 7^2 = c^2$$

$$100 + 49 = c^2$$

$$149 = c^2$$

$$\sqrt{149} = 12.2 \text{ yd}$$



3. A wooden square pyramid is to be painted. To nearest square cm, what is the area that will be painted?

$$a^2 + b^2 = c^2$$

$$6^2 + 4^2 = c^2$$

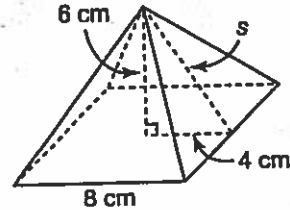
$$36 + 16 = c^2$$

$$c^2 = 52$$

$$c = \sqrt{52} = 7.2$$

$$\frac{bh}{2} = \frac{(8)(7.2)}{2}$$

$$= 28.8 \text{ cm}^2$$



SA

$$4 \times 28.8 + 64$$

$$115.2 + 64$$

$$179.2 \text{ cm}^2$$

4. A cone shaped hat is to be made with a radius of 5 in. and height of 12 in. To the nearest square inch, how much material will be needed for the hat?

$$a^2 + b^2 = c^2$$

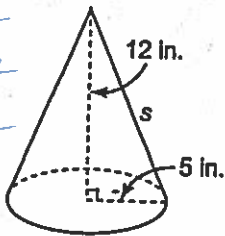
$$12^2 + 5^2 = c^2$$

$$144 + 25 = c^2$$

$$169 = c^2$$

$$c = \sqrt{169}$$

$$c = 13$$



$$\pi r s$$

$$= (3.14)(5)(13)$$

$$= 204.1 \text{ in}^2$$

↳ only lateral area needed for hat.

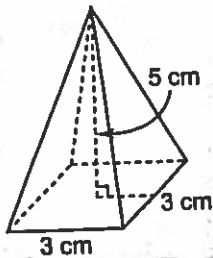
5. Calculate the volume of each object to the nearest cubic unit.

a) a square pyramid

$$V = \frac{lwh}{3}$$

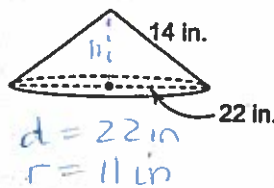
$$= \frac{(3)(3)(5)}{3}$$

$$= 15 \text{ cm}^3$$



b) a cone

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



$$a^2 + b^2 = c^2$$

$$11^2 + h^2 = 14^2$$

$$121 + h^2 = 196$$

$$h^2 = 75$$

$$h = \sqrt{75}$$

$$h = 8.7 \text{ in}$$

$$V = \frac{(3.14)(11^2)}{3}$$

$$V = 1101.8 \text{ in}^3$$

6. A rectangular pyramid can hold 1250 ft³ of water. What is the height of the pyramid?

$$V = \frac{lwh}{3}$$

$$1250 = \frac{(15)(10)h}{3}$$

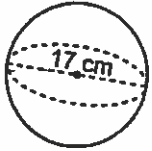
$$\frac{1250}{50} = \frac{50h}{50}$$

$$h = 25 \text{ ft}$$



1. Calculate the surface area of each object to the nearest tenth of a square unit.

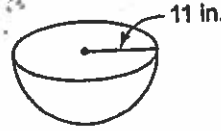
a) a sphere



$$\begin{aligned} SA &= 4\pi r^2 \\ &= 4(3.14)(8.5)^2 \\ &= 907.5 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} d &= 17 \text{ cm} \\ r &= 8.5 \text{ cm} \end{aligned}$$

b) a hemisphere



$$\begin{aligned} SA &= 3\pi r^2 \\ &= 3(3.14)(11)^2 \\ &= 1139.8 \text{ in}^2 \end{aligned}$$

2. To the nearest cubic unit, calculate the volume of each object in question 1.

a) a sphere

$$\begin{aligned} V &= \frac{4\pi r^3}{3} \\ &= \frac{4(3.14)(8.5)^3}{3} \\ &= 2571.1 \text{ cm}^3 \end{aligned}$$

b) a hemisphere

$$\begin{aligned} V &= \frac{2\pi r^3}{3} \\ &= \frac{2(3.14)(11)^3}{3} \\ &= 2089.7 \text{ in}^3 \end{aligned}$$

3. A ball has a surface area of 28 in^2 . Determine the diameter of the ball to the nearest tenth of an inch.

$$SA \text{ sphere} = 4\pi r^2$$

$$\begin{aligned} 28 &= 4(3.14)r^2 & r &= \sqrt{2.23} \\ 28 &= 12.56r^2 & r &= 1.5 \text{ in} \end{aligned}$$

$$\begin{array}{r} 12.56 \overline{) 28.00} \\ \underline{12.56} \\ 5.44 \\ \underline{5.44} \\ 0.00 \end{array}$$

$$r^2 = 2.23$$

$$\begin{aligned} \text{diameter} &= 2r \\ d &= 2(1.5) \\ d &= 3 \text{ in} \end{aligned}$$

4. A globe has a surface area of 2735 cm^2 . Find the radius of the globe to the nearest tenth of a centimeter.

$$\begin{aligned} SA &= 4\pi r^2 \\ 2735 &= 4(3.14)r^2 \\ 2735 &= 12.56r^2 \\ \frac{2735}{12.56} &= \frac{12.56r^2}{12.56} \\ 217.75 &= r^2 \\ r &= \sqrt{217.75} \\ r &= 14.8 \text{ cm} \end{aligned}$$