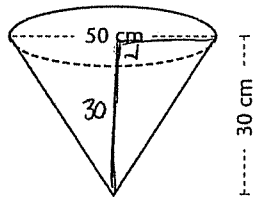
Pre Calculus Foundations Math 10
End of Year Review—Chapter 1B

Name: Key Block : _____

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

a)



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

$r = 25$

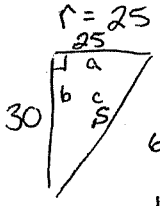
$s = \sqrt{1525}$

$SA = \pi(25)^2 + \pi(25)(\sqrt{1525})$

$SA = 5030.57$

$SA = 5031 \text{ cm}^2$

$r = 25$ cm



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

$25^2 + 30^2 = s^2$

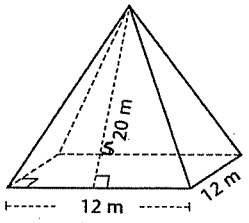
$625 + 900 = s^2$

$1525 = s^2$

$\sqrt{1525} = s$

$s \doteq 39.05$

b)



b

$SA = 2bs + b^2$

$b = 12$

$s = 20$

$SA = 2(12)(20) + (12)^2$

$= 480 + 144$

$SA = 624 \text{ m}^2$

2. Traffic markers are bottomless cones. If 75 markers are to be sprayed with fluorescent paint, find the total surface area to be painted to the nearest square inch. Traffic markers have a diameter of 10 in and a slant height of 16 in.

$r = 5$

$s = 16$

One traffic marker:

$SA = \pi r s$ (side, not base)

$SA = \pi(5)(16)$

$= 80\pi$

$SA = 251.33$

75 traffic markers

total $SA = 75(80\pi)$

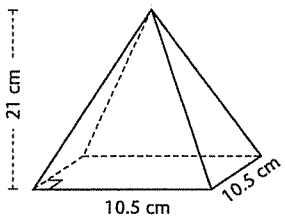
$= 6000\pi$

total $SA = 18849.6$

$= 18850$ square inches

3. Determine the volume of the object to the nearest square unit.

a)



area of base

$= 10.5(10.5)$

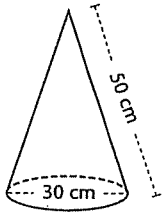
$= 110.25 \text{ cm}^2$

$V = \frac{1}{3}(\text{area of base}) \times h$

$= \frac{1}{3}(110.25)(21)$

$V = 771.75 \text{ cm}^3$

b)



area of base

$= \pi r^2$

$= \pi(15)^2$

$= 225\pi$

find "h" height.

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

$h^2 + 15^2 = 50^2$

$h^2 + 225 = 2500$

$-225 \quad -225$

$h^2 = 2275$

$h = \sqrt{2275}$

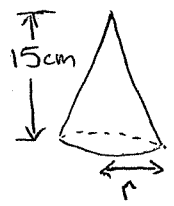
$V = \frac{1}{3}(\text{area of base}) \times h$

$= \frac{1}{3}(225\pi) \times \sqrt{2275}$

$V = 11238.33$

$V = 11238 \text{ cm}^3$

4. The volume of a cone is 3080 cm^3. Find the radius of the cone if its height is 15 cm.



$V = \frac{1}{3}(\text{area of base}) \cdot h$

$V = \frac{1}{3}(\pi r^2)h$

$3080 = \frac{1}{3}\pi r^2(15)$

$3080 = \frac{1}{3}(15)\pi r^2$

$3080 = \frac{15}{3}\pi r^2$

$3080 = 5\pi r^2$

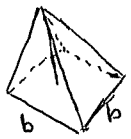
$\frac{3080}{(5\pi)} = \frac{5\pi r^2}{5\pi}$

$196.08 = r^2$

$r = \sqrt{196.08}$

$r \doteq 14\,cm$

5. Find the dimensions of the base of a right square pyramid if the volume is 5 m and the height is 3.2 m.



$V = \frac{1}{3} \times (\text{area of base}) \times h$

$5 = \frac{1}{3}(b^2)(3.2)$

$3(5) = 3\left(\frac{1}{3}\right)(b^2)(3.2)$

$15 = b^2(3.2)$

$\frac{15}{3.2} = \frac{b^2(3.2)}{3.2}$

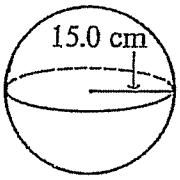
$b^2 = 4.6875$

$b = \sqrt{4.6875}$

$b = 2.165\,m$

6. Find the following:

a) Volume

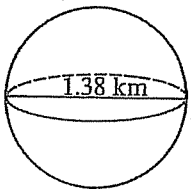


$V = \frac{4}{3}\pi r^3$

$= \frac{4}{3}\pi(15)^3$

$V = 14137.17\,cm^3$

b) Surface Area



$SA = \pi d^2$

$= \pi(1.38)^2$

$SA = 5.98\,km^2$

7. How much leather is required to cover a baseball with a radius of 3.6 cm.

$SA = 4\pi r^2$

$= 4\pi(3.6)^2$

$SA = 162.86\,cm^2$

8. A spherical soap bubble has a radius of 2 inches. It lands on a flat surface and changes into a hemisphere. Assuming that no air is lost, calculate the radius of the hemisphere.

Bubble-Sphere

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

$V = \frac{4}{3}\pi(2)^3$

$V = \frac{32}{3}\pi$ Exact V

$V = 33.5\,in^3$

Bubble-Hemisphere

$V = \frac{1}{2}\left(\frac{4}{3}\pi r^3\right)$

$= \frac{4}{6}\pi r^3$

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

$\left(\frac{32\pi}{3}\right) = \frac{2}{3}\pi r^3$

$\frac{32}{3}\pi = \frac{2}{3}\pi r^3$

$3\left(\frac{32}{3}\right)\pi = 3\left(\frac{2}{3}\right)\pi r^3$

$\frac{32\pi}{\pi} = \frac{2\pi r^3}{\pi}$

$\frac{32}{2} = \frac{2r^3}{2}$

$16 = r^3$

$r = \sqrt[3]{16}$

$r = 2.52\,in$