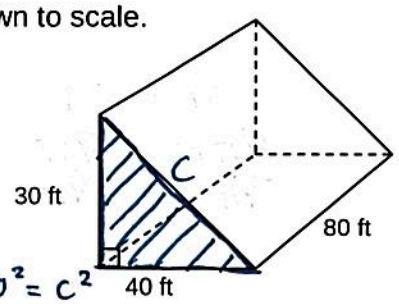
Chapter 4 Review
Pre-AP Geometry

Name Key

Date _____ Period _____

Directions: All work must be shown to receive full credit. Figures are not drawn to scale.

1. Find the surface area and volume of the triangular prism.



$SA = Ph + 2B$

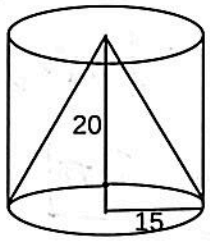
$= 120(80) + 2(600)$

$= 10,800\ ft^2$

$30^2 + 40^2 = c^2$

$C = 50$

2. Find the volume of the remaining figure when the cone is removed from the cylinder.



$Cyl. = Bh$

$= \pi r^2 h$

$= \pi(15^2)(20)$

$= 4500\pi$

$Cone = \frac{1}{3}Bh$

$= \frac{1}{3}(4500\pi)$

$= 1500\pi$

$4500 - 1500 = 3000\pi$

3. Two similar cylinders have surface areas of 18π and 32π.

a) Find their similarity ratio.

$\frac{3}{4}$

$\frac{18}{32} \rightarrow \frac{9}{16}$

D	A	V
$\frac{3}{4}$	$\frac{9}{16}$	$\frac{27}{64}$

b) Find the ratio of their volumes.

$\frac{27}{64}$

c) If the volume of the large cylinder is 320π, what is the volume of the small cylinder?

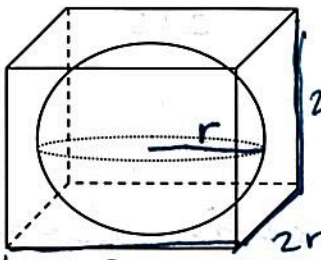
$\frac{27}{64} = \frac{x}{320}$

$x = 135\pi$

4. A sphere is inscribed in a cube. Find the ratio of the (a) surface area of the sphere to the surface area of the cube and (b) the volume of the sphere to the volume of the cube. r = 6

$SA = \frac{Sphere}{cube} = \frac{4\pi r^2}{Ph + 2B} = \frac{4\pi r^2}{8r(2r) + 2(4r^2)}$

$= \frac{4\pi r^2}{24r^2} = \frac{4\pi}{24} = \frac{\pi}{6}$



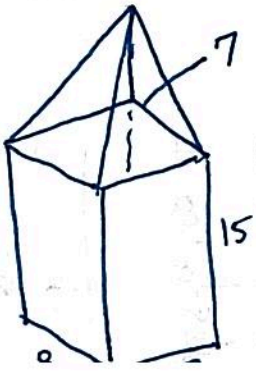
$l = 2r$

$w = 2r$

$h = 2r$

$V = \frac{Sphere}{cube} = \frac{\frac{4}{3}\pi r^3}{Bh} = \frac{\frac{4}{3}\pi r^3}{4r^2(2r)} = \frac{\frac{4}{3}\pi r^3}{8r^3} = \frac{\frac{1}{8}\cdot\frac{4}{3}\pi}{\frac{1}{8}\cdot 8} = \frac{4\pi}{24} = \frac{\pi}{6}$

5. A rectangular pyramid fits exactly on top of a rectangular prism. Find the volume of the composite space figure if the prism has length 17 cm, width 8 cm, height 15 cm, and the pyramid has a height 7 cm.



$pyr.\ V = \frac{1}{3}Bh$

$= \frac{1}{3}(136)(7)$

$= \frac{952}{3}$

$prism\ V = Bh$

$= 2040$

$2040 + \frac{952}{3}$

$V = 2357.\overline{33}\ cm^3$

6. If the surface area of a sphere is 9π, find its volume.

$SA = 9\pi$ $\quad r^2 = 2.25$

$\frac{4\pi r^2}{4\pi} = \frac{9\pi}{4\pi}$ $\quad r = 1.5$

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

$V = 4.5\pi$

7. (a) Suppose you rotate the right triangle shown 360° about the x-axis, what is the volume of the resulting cone in terms of π? (b) suppose you rotate the triangle 360° about the x-axis. What is the surface area in terms of π?

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

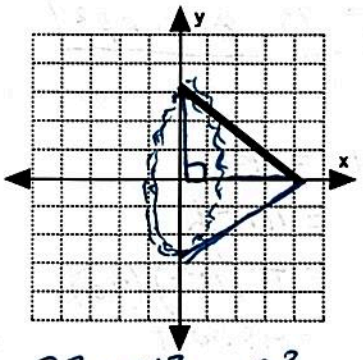
$= \frac{1}{3}\pi(3^2)(4)$

$= 12\pi$

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

$= \pi(3)(5) + \pi 9$

$= 24\pi$



$3^2 + 4^2 = l^2$

$l = 5$

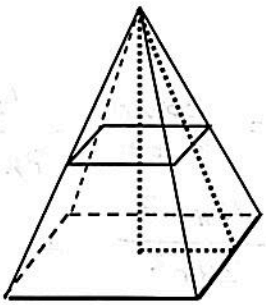
8. The lateral area of two similar cones is 36π cm^2 and 25π cm^2. What is the ratio of the heights?

6 : 5

D	A	V
$\frac{6}{5}$ ←	$\frac{36}{25}$	

9. A plane parallel to the base of a square pyramid divides the pyramid into 2 pieces making 2 similar pyramids. Find the ratio of:

height of small pyramid = 2, height of large pyramid = 5



a) a:b 2 : 5

b) SA top pyramid to SA large pyramid 4 : 25

c) area of smaller pyramid's base to large pyramid's base 4 : 25

~~d) SA smaller pyramid to LA of just the bottom part~~

D	A	V
$\frac{2}{5}$ →	$\frac{4}{25}$	

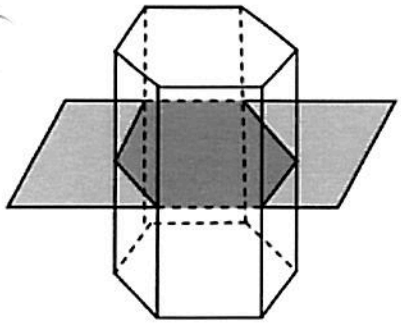
10. Two similar pyramids have lateral areas of 8 cm^2 and 18 cm^2. If the volume of the smaller pyramid is 32 cm^3, what is the volume of the larger pyramid?

$\frac{8}{27} = \frac{32}{x}$

$x = 108\ \text{cm}^3$

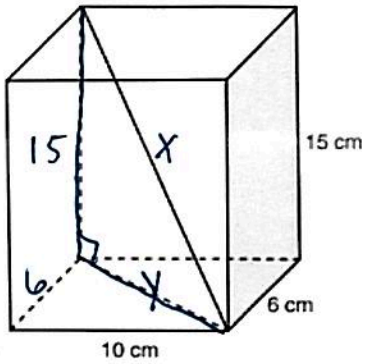
D	A	V
	$\frac{8}{18}$	$\frac{8}{27}$
$\frac{2}{3}$ ←	↓ $\frac{4}{9}$	

11. What is the cross section?



Hexagon

12. What is the length of the stick in the box?



$10^2 + 6^2 = y^2$

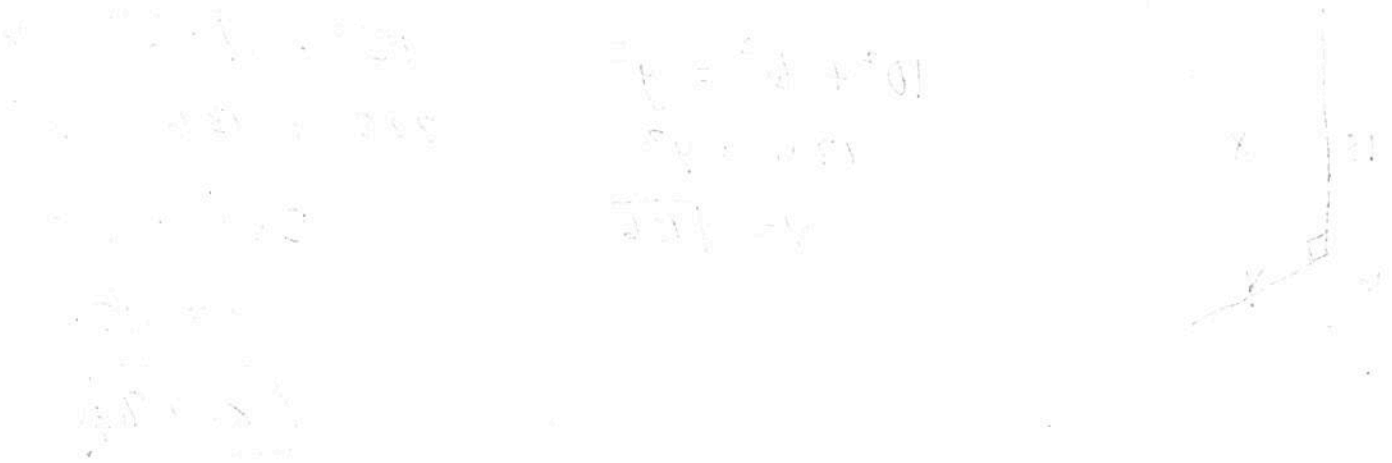
$136 = y^2$

$y = \sqrt{136}$

$15^2 + \sqrt{136}^2 = x^2$

$225 + 136 = x^2$

$361 = x^2$

$x = \sqrt{361}$

$x = 19\text{cm}$