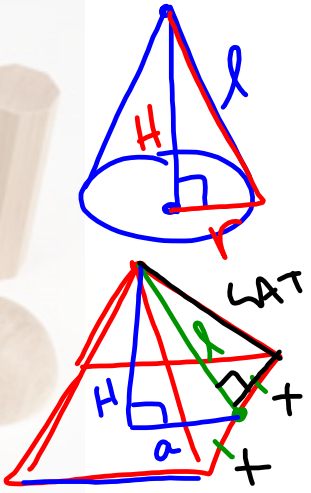
AGENDA - Unit 10.6

Composite Solids

Go over HW 10.5

- Notes 10.6
- Quiz - Next Class

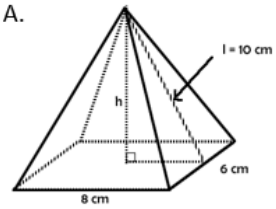
HW - 10.6 - Worksheet



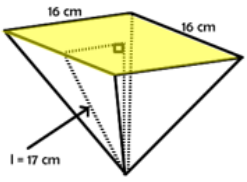
WORKSHEET 10-5 LAB Name _____ Due _____ Section_____

1. Determine the altitude height of the following right pyramids to the nearest hundredth:

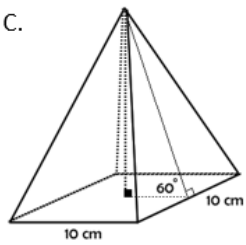
A.



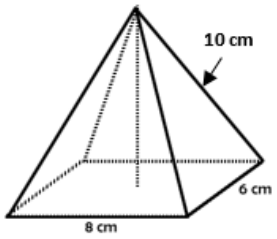
B.



C.

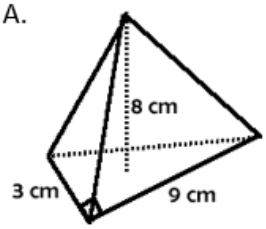


2. Determine the altitude height of the right pyramid in simplest radical form:

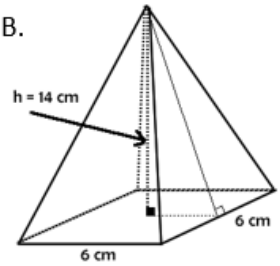


3. Find the volume of the following pyramids, to the nearest tenth of a cubic centimeter:

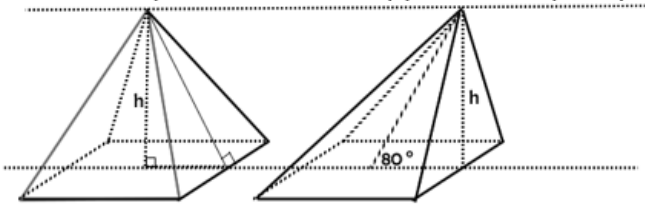
A.



B.



4. Two pyramids with the same base are side by side. One is a right pyramid and the other is an oblique pyramid. If the oblique pyramid has been tilted to an angle of 80°, what is volume relationship between the two pyramids? Explain your reasoning.



Geometry LAB Name _____ Section _____ Date_____

10-6 Notes: Composite Solids

Similar to the composite planar shapes, we can calculate surface area and volume for composite solids.

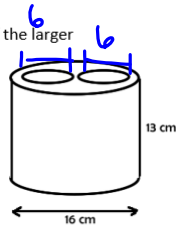
STEPS FOR SUCCESS:

1. Break the solid into simple solids.
2. Find missing dimensions.
3. Write an equation that represents the desired volume using addition/subtraction/multiplication/division.
4. Compute the simple solid volumes.
5. Substitute in the simple volumes and evaluate the equation.
6. Round at the end as necessary.

PRACTICE:

1. Composite: Two cylinders each with a diameter of 6 cm have been drilled out of the larger cylinder. Find the volume of the cylinder in terms of π.

C
A
r = 3
D = 6



C
A = $\pi 8^2 = 64\pi$
r = 8
D = 16

$V = V_{LARGE} - 2V_{SMALL}$

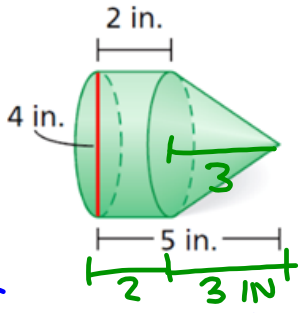
$V = BH$	$V = BH$
$= \pi r^2 H$	$= \pi r^2 H$
$= \pi 8^2 (13)$	$= \pi 3^2 (13)$
$= 832\pi$ cm^3	$= 117\pi$ cm^3

$V = 832\pi - 2(117\pi)$

$= 832\pi - 234\pi$

$V = 598\pi$ cm^3

2. Find the volume of the composite solid, in terms of π.



$V = V_{CONE} + V_{CYL}$

$V = \frac{BH}{3}$	$V = BH$
$= \frac{(4\pi)(3)}{3}$	$= (4\pi)(2)$
$= 4\pi$	$= 8\pi$

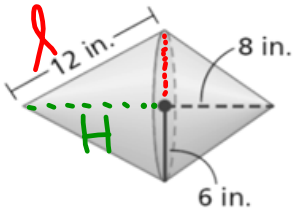
$V = 4\pi + 8\pi$

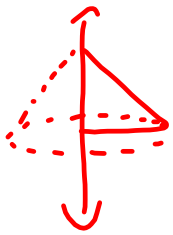
$V = 12\pi$ IN^3

C
A = $\pi r^2 = \pi 2^2 = 4\pi$ IN^2
R = 2 IN
D = 4 IN

(B)

3. Given the composite solid, draw the 2-D figure that could be rotated about the axis to create the composite solid. Include all exact dimensions of the side lengths.





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

$6^2+H^2=12^2$

$36+H^2=144$

$H^2=108$

$H=\pm\sqrt{108}=\sqrt{36}\sqrt{3}$

$6\sqrt{3}$

$6\sqrt{3}$ IN

$8+6\sqrt{3}$ IN

OR $6^2+8^2=l^2$

$\{3-4-5\}$

$\{6-8-l\}$

$K=2$ $K=2$

$5(2)=10$

4. Find the volume of the composite solid to the nearest cubic centimeter.

$360\text{ cm}^3+240\text{ cm}^3=600\text{ cm}^3$

$V=V_{TRI\ PRISM}+V_{RECT\ PRISM}$

$V=BH$

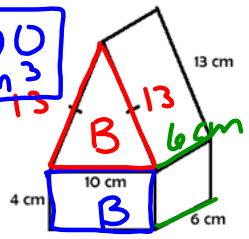
$=(60)(6\text{cm})$

$=360\text{ cm}^3$

$V=BH$

$=(40)(6)$

$=240\text{ cm}^3$

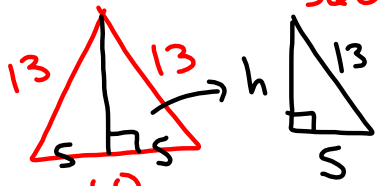


10

4 B

$B=bh=4(10)$

$=40\text{ cm}^2$



ISOS Δ $\frac{bh}{2}=\frac{(10)(12)}{2}$

$=60\text{ cm}^2$

$5^2+h^2=13^2$

$25+h^2=169$

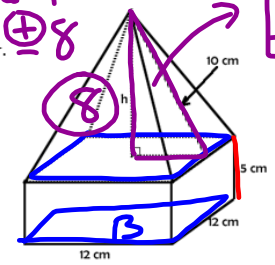
$h^2=144$

$h=\pm\sqrt{144}$

$h=12$

$a^2+b^2=c^2$ $36+H^2=100$
$6^2+H^2=10^2$ $H^2=64$
$H=\pm 8$

5. Find the volume of the composite solid to the nearest whole cubic centimeter.



$V = V_{PRISM} + V_{PYR}$

$V = BH$
$= (144)(5)$
$= 720\ cm^3$

$V = \frac{BH}{3}$
$= \frac{(144)(8)}{3}$
$= 576\ cm^3$

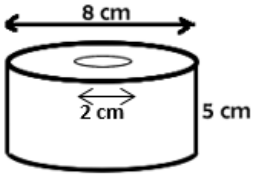
B 12
12

$B = bh = 12(12)$
$= 144\ cm^2$

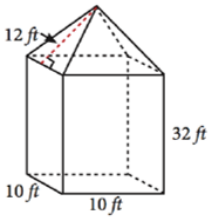
$V = 720 + 384 = \boxed{1104\ cm^3}$

WORKSHEET 10-6 LAB Name _____ Due _____ Section_____

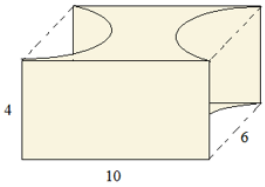
1. Determine the volume of the solid in terms of π.



2. Find the volume of the composite solid, to the nearest tenth.



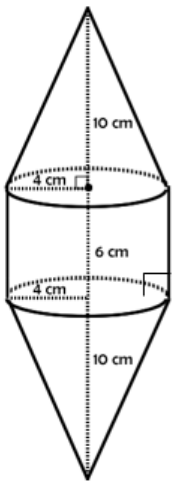
3. Find the volume of the composite solid in terms of π.



4. Given the right composite solid,

a. Draw the 2-D figure that could be rotated about the axis to create the composite solid:

b. Find the total volume, in terms of π.



This was part of a 6-point Regents question!!

5. A Dixie cup is a truncated (cut off) cone with base diameters of 88 mm and 57 mm. In order to find the height of just the cup, the sides of the cup have been extended to locate the vertex of the cone. The height of the whole cone is 380 mm.

   a. Why can you use similar triangles in this situation (what criteria is satisfied and why)?

   b. Determine the height of just the cup, y, to the nearest tenth.