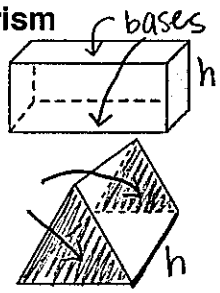
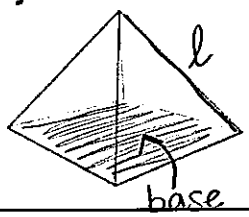
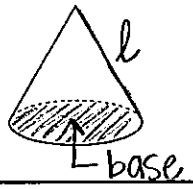
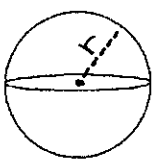
Name: KEY! Date: _____ Hour: _____

Surface Area Formulas

Surface Area: the outside of a 3D figure (all of the faces combined)

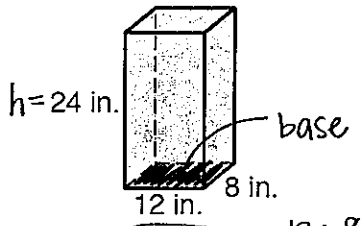
Lateral Area: the outside of a 3D figure, not including the bases.

SHAPE	S.A. & L.A. FORMULAS	VARIABLES
Prism 	$LA = P \cdot h$ $SA = LA + 2B$	P = perimeter of the **base** shape! h = height of figure B = area of **base** shape
Cylinder 	$LA = C \cdot h$ $SA = LA + 2B$	C = circumference of **base** h = height of figure B = area of **base** shape!
Pyramid 	$LA = \frac{1}{2} \cdot \ell \cdot P$ $SA = LA + B$	ℓ = slant height P = perimeter of the **base** shape B = area of **base** shape
Cone 	$LA = \frac{1}{2} \cdot \ell \cdot C$ $SA = LA + B$	ℓ = slant height C = circumference of the **base** B = area of **base** shape
Sphere 	$SA = 4 \cdot \pi \cdot r^2$ *there is no lateral area!	r = radius of sphere

Name: _____ Date: _____ Hour: _____

Practice

1.



$LA = P \cdot h$

$12+8+12+8 = 40$

$= 40 \cdot 24$

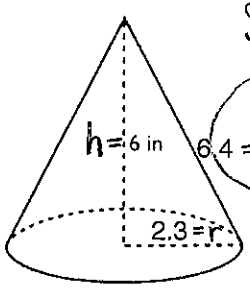
$LA = 960 \text{ in}^2$

$SA = LA + 2B$ ($12 \cdot 8 = 96$)

$= 960 + 2 \cdot 96$

$SA = 1152 \text{ in}^2$

2.



$\pi \cdot r^2 = \pi \cdot 2.3^2 = 16.6$

$SA = LA + B$

$= 46.4 + 16.6$

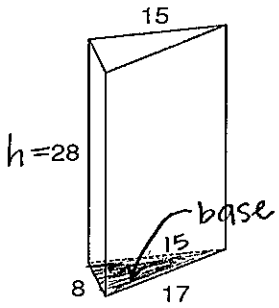
$SA = 63 \text{ in}^2$

$LA = \frac{1}{2} \cdot l \cdot C$ ($C = 2\pi r$, $2 \cdot \pi \cdot 2.3 = 14.5$)

$= \frac{1}{2} \cdot 6.4 \cdot 14.5$

$LA = 46.4 \text{ in}^2$

3.



$8+15+7 = 30$

$LA = P \cdot h$

$= 30 \cdot 28$

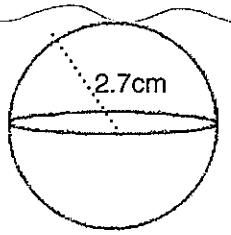
$LA = 840 \text{ units}^2$

$SA = LA + 2B$ ($\frac{1}{2} \cdot b \cdot h$, $\frac{1}{2} \cdot 8 \cdot 17 = 68$)

$= 840 + 2 \cdot 68$

$SA = 976 \text{ units}^2$

4.

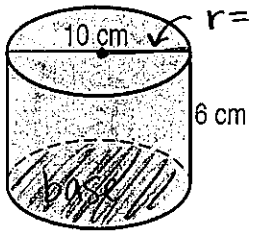


$SA = 4 \cdot \pi \cdot r^2$

$= 4 \cdot \pi \cdot 2.7^2$

$SA = 91.6 \text{ cm}^2$

5.



$LA = C \cdot h$ ($2 \cdot \pi \cdot r$, $2 \cdot \pi \cdot 5 = 31.4$)

$= 31.4 \cdot 6$

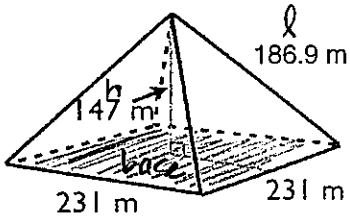
$LA = 188.4 \text{ cm}^2$

$SA = LA + 2B$ ($\pi \cdot r^2$, $\pi \cdot 5^2 = 78.5$)

$= 188.4 + 2 \cdot 78.5$

$SA = 345.4 \text{ cm}^2$

6.



$LA = \frac{1}{2} \cdot l \cdot P$ ($231+231+231+231 = 924$)

$= \frac{1}{2} \cdot 186.9 \cdot 924$

$LA = 86,347.8 \text{ m}^2$

$SA = LA + 2B$ ($231 \cdot 231 = 53,361$)

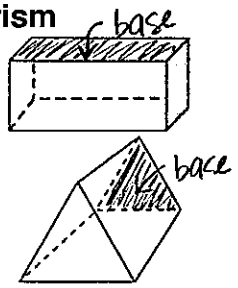
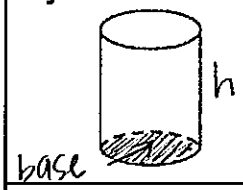
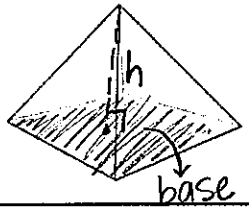
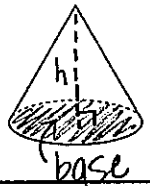
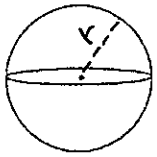
$= 86,347.8 + 2 \cdot 53,361$

$SA = 193,069.8 \text{ m}^2$

Name: _____ Date: _____ Hour: _____

Volume Formulas

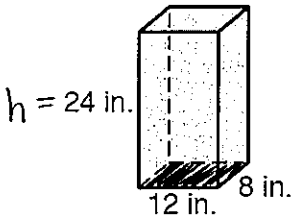
Volume: how much a 3D figure can hold on its inside!

SHAPE	V. FORMULAS	VARIABLES
Prism 	$V = B \cdot h$	B = area of the base shape h = height of the figure
Cylinder 	$V = B \cdot h$	
Pyramid 	$V = \frac{B \cdot h}{3}$	
Cone 	$V = \frac{B \cdot h}{3}$	
Sphere 	$V = \frac{4}{3} \cdot \pi \cdot r^3$	r = radius of the sphere

Name: _____ Date: _____ Hour: _____

Practice

1.

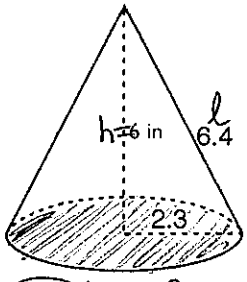


$V = B \cdot h$ $12 \cdot 8 = 96$

$= 96 \cdot 24$

$= \boxed{2{,}304 \text{ in}^3}$ volume

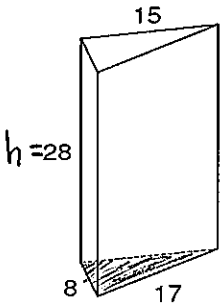
2.



$V = \frac{B \cdot h}{3}$ $\pi \cdot r^2$ $\pi \cdot 2.3^2 = 16.6$

$= \frac{16.6 \cdot 6}{3} = \boxed{33.2 \text{ in}^3}$ volume

3.

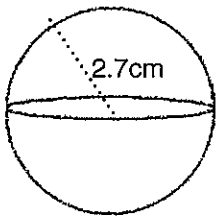


$V = B \cdot h$ $\frac{1}{2} \cdot b \cdot h$ $\frac{1}{2} \cdot 17 \cdot 8 = 68$

$= 68 \cdot 28$ volume

$= \boxed{1904 \text{ units}^3}$

4.

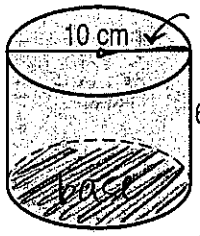


$V = \frac{4}{3} \cdot \pi \cdot r^3$

$= \frac{4}{3} \cdot \pi \cdot 2.7^3$

$= \boxed{82.4 \text{ cm}^3}$ volume

5.

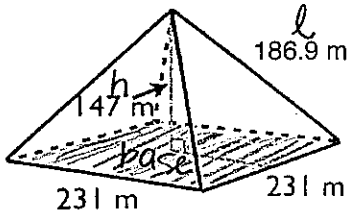


$V = B \cdot h$ $\pi \cdot r^2$ $\pi \cdot 5^2$ 78.5

$= 78.5 \cdot 6$

$= \boxed{471 \text{ cm}^3}$ volume

6.



$V = \frac{B \cdot h}{3}$ $231 \cdot 231 = 53{,}361$

$= \frac{53{,}361 \cdot 147}{3}$ volume

$= \boxed{2{,}614{,}689 \text{ m}^3}$