Name: _____ Date: _____ Block: _____

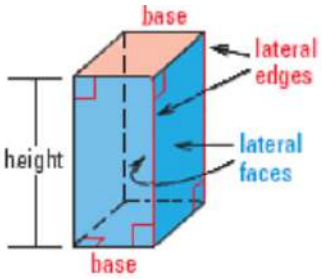
Chapter 12: Surface Area and Volume

Surface Area of Prisms and Cylinders

PRISM	a polyhedron with two bases (bases are the congruent faces)
LATERAL FACE	the faces of a prism that are parallelograms formed by connecting the corresponding vertices of the bases of the prism.
LATERAL EDGE	the segments connecting the corresponding vertices of the bases of a prism
HEIGHT (altitude)	Perpendicular distance between the bases
SLANT HEIGHT	Altitude of an oblique prism (oblique prisms are "leaning" or "slanted")
RIGHT PRISM	a prism in which each lateral edge is perpendicular to both bases

EXAMPLES:

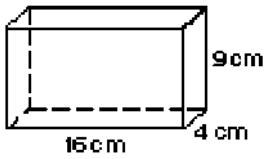
Right Rectangular Prism



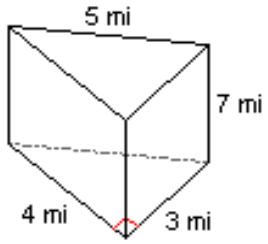
SURFACE AREA OF A RIGHT PRISM	$SA = 2B + Ph$ B (area of the base), P (perimeter of the base), h (distance between the bases)

EX 2: Find the surface area of the right prisms.

a)



b)

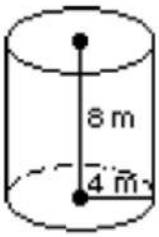


EX 3: Find the surface area of a right rectangular prism with a height of 2 inches, a length of 5 inches and a width of 6 inches.

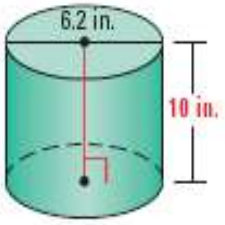
CYLINDER	Solid with congruent circular bases
LATERAL AREA	Area of the curved surface
SURFACE AREA OF A RIGHT CYLINDER	$SA = 2\pi r^2 + 2\pi rh$ r (radius of circle), h (distance between circles)

EX 6: Find the surface area of the right cylinders.

a)



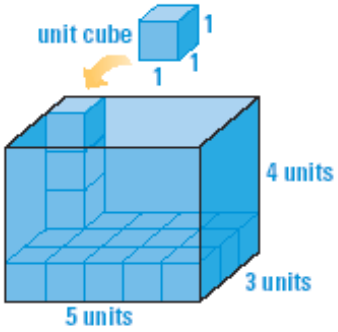
b)



Volume of Prisms and Cylinders

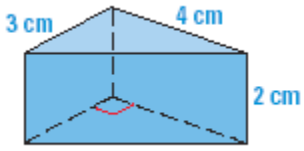
VOUME OF A CUBE	$V = s^3$
VOLUME OF A PRISM	$V = Bh$ B (are of the base), h (distance between bases)
VOLUME OF A CYLINDER	$V = \pi r^2 h$ r (radius of circle), h (distance between circles)

EX 1: The box shown is 5 units long, 3 units wide, and 4 units high. How many unit cubes will fit in the box? What is the volume of the box?

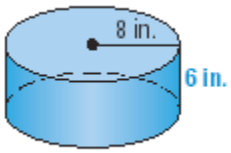


EX 2: Find the volume of the right prism and right cylinder.

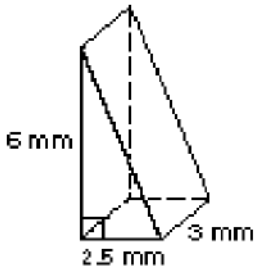
a)



b)



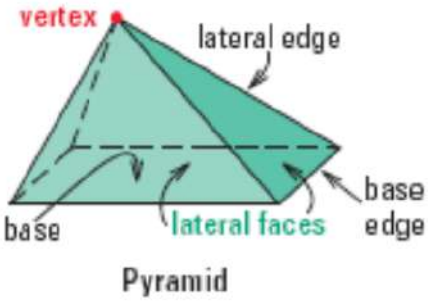
c)



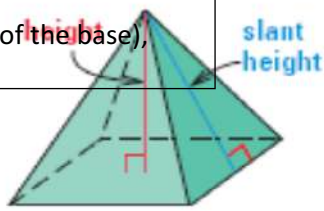
d)

Surface Area of Pyramids and Cones

PYRAMID	a polyhedron in which the base is a polygon and the lateral faces are triangles with a common vertex (called the vertex of the pyramid)
REGULAR PYRAMID	has a regular polygon for a base, and the segment joining the vertex and the center of the base is perpendicular to the base

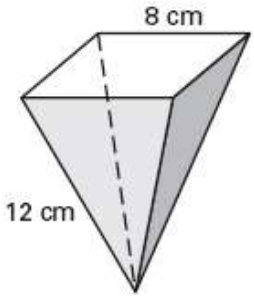


SURFACE AREA OF A REGULAR PYRAMID	$S = B + \frac{1}{2}Pl$ B (area of the base), P (perimeter of the base), l (slant height)

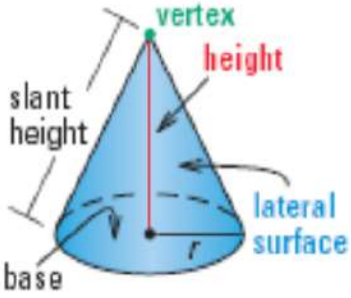


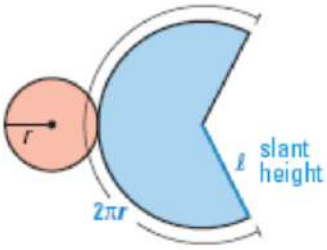
Regular pyramid

EX 2: Find the area of the regular pyramid.



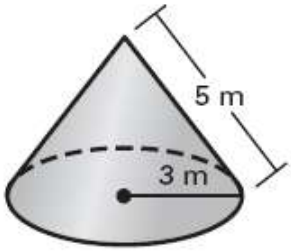
CONE	Circular base with a vertex not in the same plane as the base
RIGHT CONE	Segment joining vertex and center of circle is perpendicular to base
LATERAL SURFACE	All segments that connect the vertex with points on the base edge. (net looks like pac man!)
SURFACE AREA OF A RIGHT CONE	$SA = \pi r^2 + \pi rl$ R (radius of the circle), l (slant height)



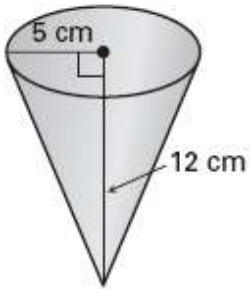


EX 3: Find the surface area of the cone.

a)

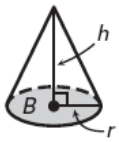


b)



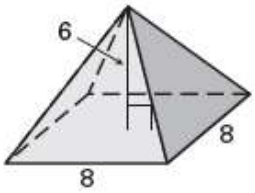
Volume of Pyramids and Cones

VOLUME OF A REGULAR PYRAMID		$V = 1/3\ B\ h$ B (area of the base), h (height)

VOLUME OF A RIGHT CONE		$V = 1/3\ \pi\ r^2\ h$ r (radius of circle), h (height)

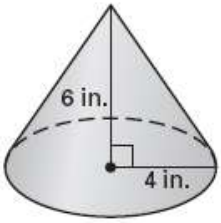
EX 1: Find the volume of each pyramid. (The bases are regular polygons.)

a)

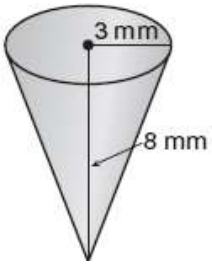


EX 2: Find the volume of each cone.

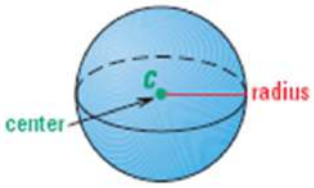
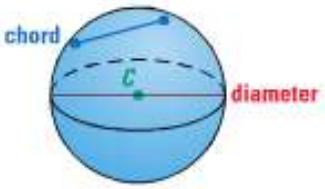
a)



b)

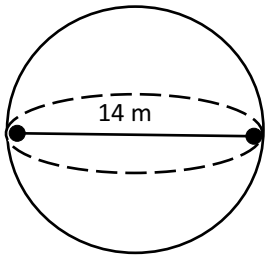


Surface Area and Volume of Spheres

SPHERE	Set of all points in space equidistant from a given point
Other Vocabulary to recall: **Center** **Radius** **Chord** **Diameter**	 
SURFACE AREA OF A SPHERE	$SA = 4\ \pi\ r^2$ r (radius)

EX 1: Find the surface area of each of the following

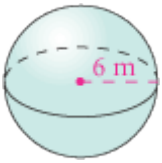
a)



b) A rubber ball that has a circumference of 13π cm.

VOLUME OF A SPHERE	$V = 4/3\ \pi\ r^3$ r (radius)	

EX 2: Find the volume of the sphere. Leave your answers in terms of π .

a) 

b)