NAME _____   GEOMETRY

UNIT 12

VOLUME & SURFACE AREA

DATE	PAGE	TOPIC	HOMEWORK
5/5	X	Regents review Part 1 in class	None
5/6	X	Finish Part 1 &2 in class	None
5/7	X	Go over part 1&2 questions	None
5/8	X	Part 3,4 in class	None
5/9	X	Go over part 3&4	None
5/12	3/4	Area and perimeter of triangles, quadrilaterals and circles	Worksheet #1
5/13	5	Area and perimeter of regular polygons	Worksheet #2
5/14	6/7	QUIZ Naming 3D shapes, identifying edges, vertices, faces	Worksheet #3
5/15	8	Discovering and Drawing Nets	Draw Nets only on Worksheet
5/16	8/9	Lateral Area & Surface Area Formulas	Find LA and SA on worksheet
5/19	9	Practice with lateral area and surface area QUIZ	No Homework
5/20	10/11	Stacking Area	No Homework
5/21	12	Volume Formulas	No Homework
5/22	13	**2 REGENTS EXAMS DUE!!!** Practice with Volume	Worksheet
5/27	14/15	Composite Volume	Worksheet
5/28	14/15	More Composite Volume QUIZ	No Homework
5/29		REVIEW	TICKET IN
5/30		TEST	
6/2-6/13		Review for Final Exam	

REGENTS EXAM: JUNE 20, 2014 (12:00-3:00)

Bring 2 pens and 2 pencils

GEOMETRY REGENTS REFERENCE SHEET

The Geometry Regents Examination will include a reference sheet containing the formulas specified below.

<table>
<tr><td rowspan="4">Volume</td><td>Cylinder</td><td>V=Bh
where B is the area of the base</td></tr>
<tr><td>Pyramid</td><td>$V=\frac{1}{3}Bh$
Where B is the area of the base</td></tr>
<tr><td>Right Circular Cone</td><td>$V=\frac{1}{3}Bh$
Where B is the area of the base</td></tr>
<tr><td>Sphere</td><td>$V=\frac{4}{3}\pi r^3$</td></tr>
</table>

<table>
<tr><td rowspan="2">Lateral Area (L)</td><td>Right Circular Cylinder</td><td>L=2πrh</td></tr>
<tr><td>Right Circular Cone</td><td>L=πrl
Where l is slant height</td></tr>
</table>

<table>
<tr><td>Surface Area</td><td>Sphere</td><td>SA=4πr^2</td></tr>
</table>

PERIMETER/AREA REVIEW

AREA FORMULAS	
Rectangle	Triangle
Square	Circle (area)
Trapezoid	Circle (perimeter)

Find the areas and perimeters of the shapes

1.)

6in

10in

2.)

6cm

3.)

8mm

4.)

A   P   B

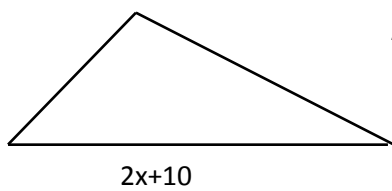9 ft

D   C
6 ft
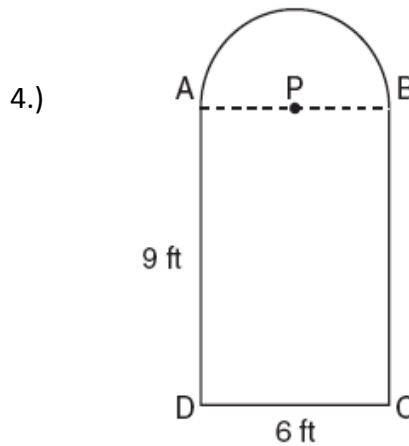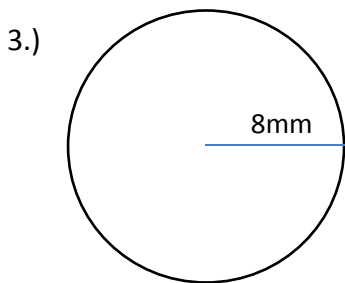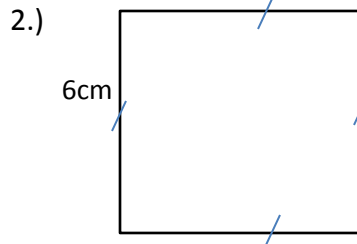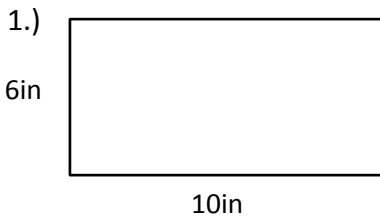
5.) Express the area & perimeter in terms of x

x-1

x+5
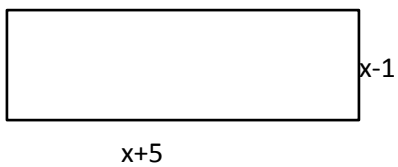
You may have to use Pythagorean Theorem to find missing pieces when doing area or perimeter:

6.)

12cm

8cm

7.)

6m

8m

8.)

10cm

3cm

2cm
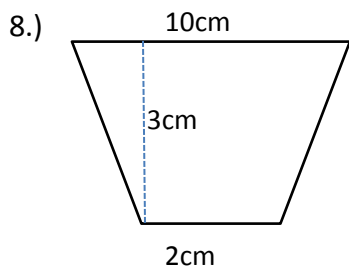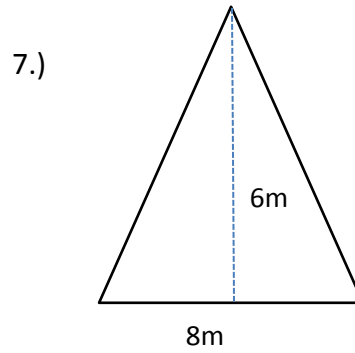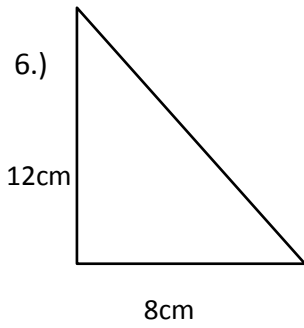
9.) Express h in terms of x

$A=6x^2+30x$

2x+10

4

AREAS AND PERIMETERS OF REGULAR POLYGONS

Vocab:

Radius of a polygon_____

Apothem: _____
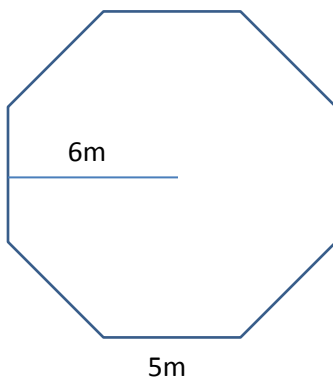
Find the area and the perimeter of the regular polygons.

1.)

10in

2.)

4in

6in

3.)

6m

5m

4.)

8cm
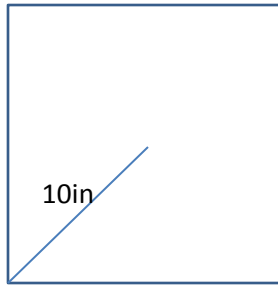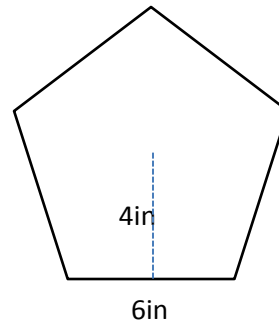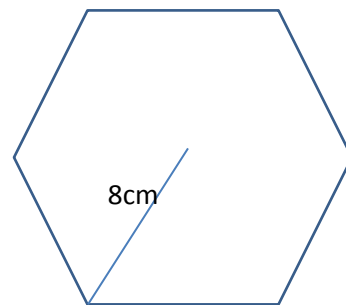
Vocab:

Polyhedron:_____

Prism: _____
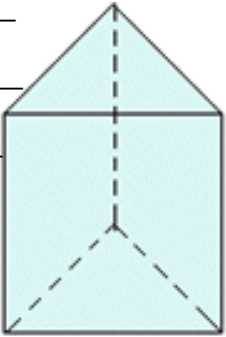
Cross Section: _____

Vertex (8)

Edge (12)

Face (6)
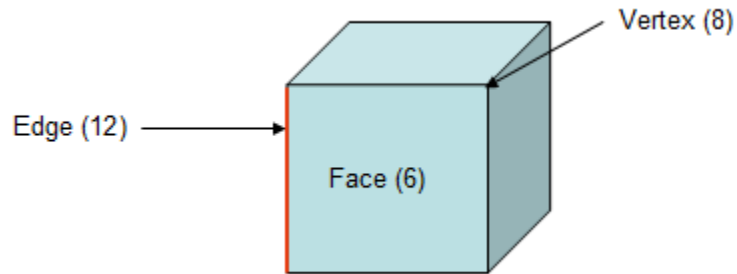
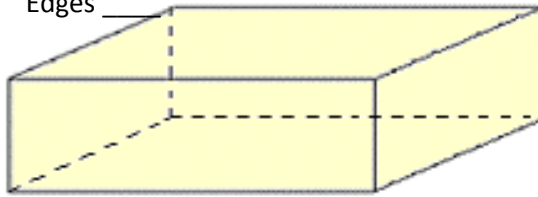Name the following shapes, state the number of faces, vertices and edges:

1.)Faces ____

Vertices____

Edges ____

2.)Faces ____

Vertices____

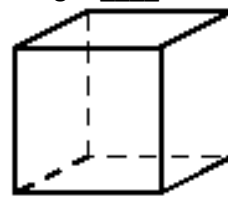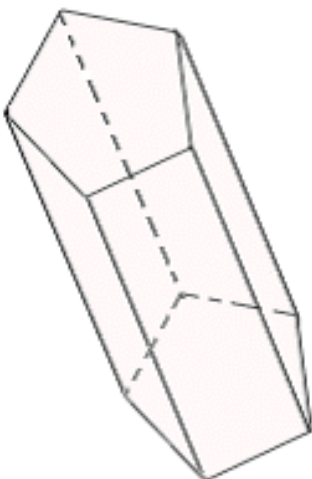Edges ____

3.)Faces ____

Vertices____

Edges ____
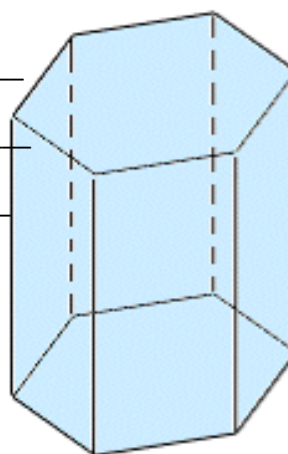
4.)Faces ____

Vertices____

Edges ____

5.)Faces ____

Vertices____

Edges ____

There are 5 regular polyhedrons. They are called regular because all of their faces are congruent regular polygons. Name the polyhedrons below.

Note: polyhedrons are named based on how many faces they have not the shape of the face
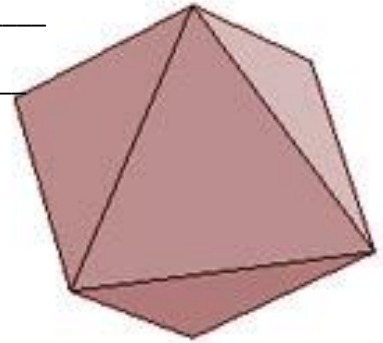
6.)Faces ____

Vertices____

Edges ____
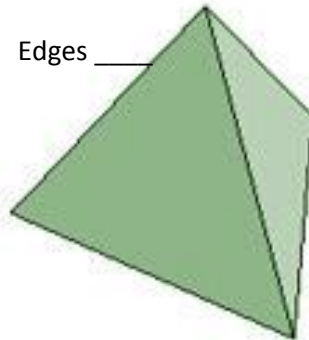
Dodecahedron

7.)Faces ____

Vertices____

Edges ____

8.)Faces ____

Vertices____

Edges ____

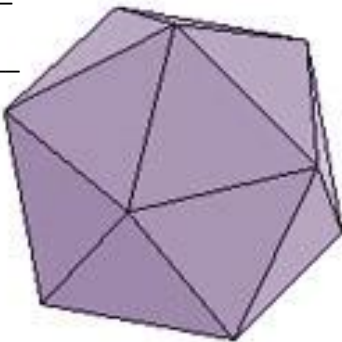Octahedron

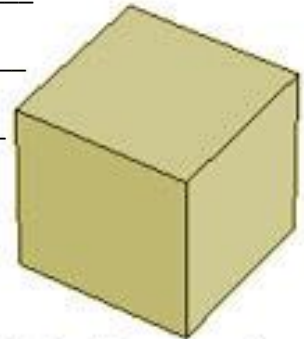9.)Faces ____

Vertices____

Edges ____

Icosahedron

Tetrahedron

10.)Faces ____

Vertices____

Edges ____

Cube (hexahedron)
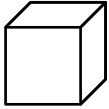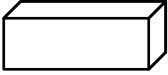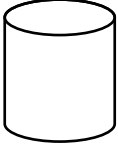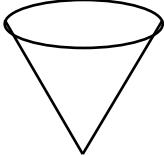
SURFACE AREA/LATERAL AREA NOTES
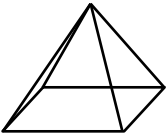
Vocab:
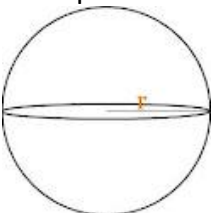
Surface Area_____

Lateral Area_____

Solids
(** On Regents Reference Sheet)

Solid:	Net:	Lateral Area:	Surface Area:
Cube			
Rectangular Prism			
Cylinder		**	
Cone		**	
Pyramid			

Sphere			**
	X	X	

EXAMPLES: Find the lateral area and surface area.

1.)

10 cm
20 cm
15 cm

2.)

27 cm
12 cm

3.)

4 in
10 in
6 in

9
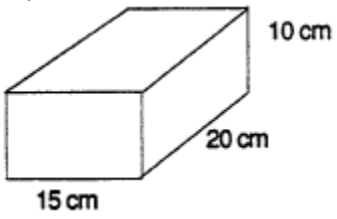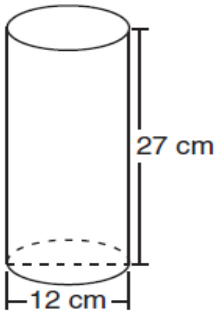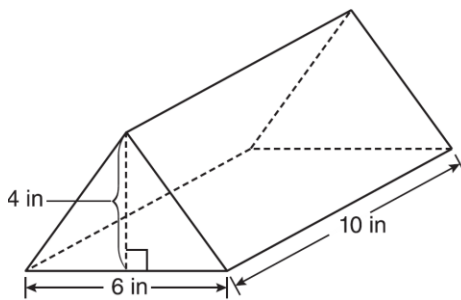
Stacking Areas Activity

Task #1- Find the area of the figures below:

a.)

4units

b.)

7units

c.)

8units

10units
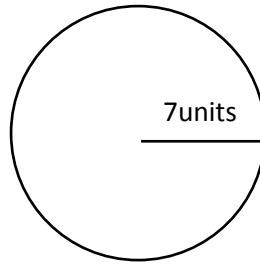
Task #2 - If we take a bunch of the same shapes and stack them, we will get something that has 3 dimensions. The picture below shows what it would look like if we stack 5 of the rectangles from part (a), each 1 unit apart. Draw what it would look like if we stacked 5 of the circles from part (b) and 5 of the triangles from part (c)

(a)

(b)

(c)

10

Task #3- Answer the following questions:

1.) By stacking "area" we will get a new measurement. This new measurement is called _____

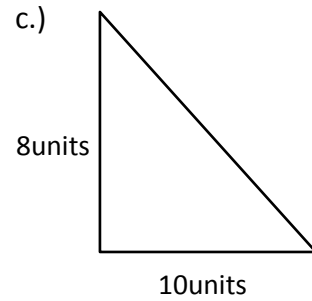2.) The units on area are u^2, the units on volume are _____

3.) Find the volume of the shapes in Task #2
      a.)   b.)   c.)

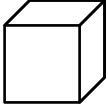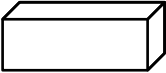4.) Using what you just did, write a formula for the following volumes:
        a.) volume of a 3d shape with a rectangle as a base:
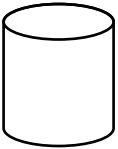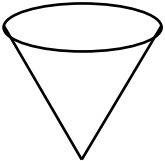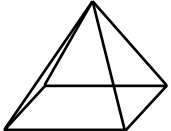
        b.) volume of a 3d shape with a circle as a base:

        c.) volume of a 3d shape with a triangle as a base:

VOLUME

In General: Volume=Bh

where, (B=   ) (h=   )

Solid	Volume Formula (** Included on Regents Reference Sheet)	Find the Volume:
Cube		
Rectangular Prism		
Cylinder	**	
Cone	**	
Pyramid	**	

Sphere	**	

**Practice problems:**

1.) If the volume of a cube is 125 in^3, what is the length of one of the sides of the cube?

2.) If the volume of a cylinder is 150cm^3 and the height of the cylinder is 15, what, to the nearest tenth is the radius of the cylinder?

3.) The volume of a rectangular prism is 24 ft^3, the height is 2, what are three possible measures for the length and width of the prism?

COMPOSITE VOLUME

1.) A concrete block (cube) has a cylindrical hole 4 feet in diameter drilled through it to allow a pipe to pass through. How many cubic feet of concrete are left in the block? Round your answer to the nearest tenth.

6ft
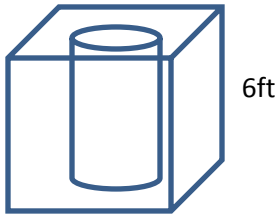
2.) The figure shown is a cylindrical solid with a circular cylindrical hole drilled out of the center. Find the volume of the resulting solid. The diameter of the inside cylinder is 2in, the diameter of the large cylinder is 4 in.

3in
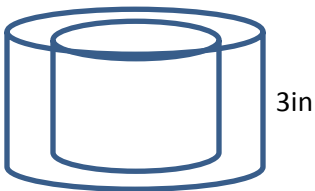
3.)The box shown is a candy container with a square base and a pyramidal top. What is the surface area and the volume of the box?

4in

3in

4in

4in
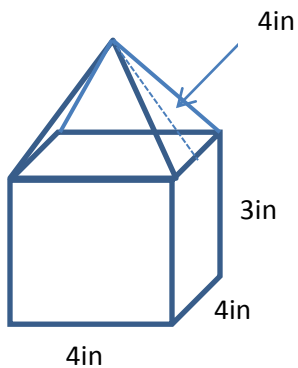
4.) In the diagram, a rectangular container with the dimensions 10 inches by 15 inches by 20 inches is to be filled with water, using a cylindrical cup whose radius is 2 inches and whose height is 5 inches. What is the maximum number of full cups of water that can be placed into the container without the water overflowing the container?
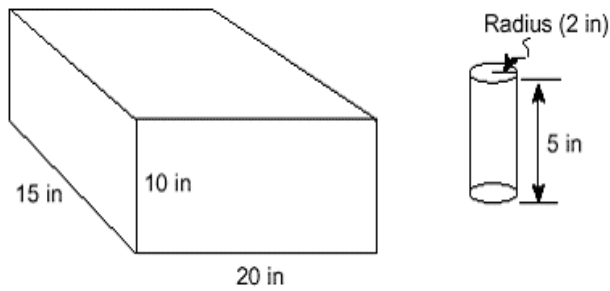
5.) Tracey has two empty cube-shaped containers with sides of 5 inches and 7 inches, as shown in the accompanying diagram. She fills the smaller container completely with water and then pours all the water from the smaller container into the larger container. How deep, to the *nearest tenth of an inch*, will the water be in the larger container?
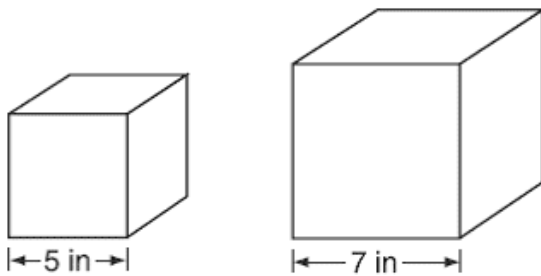
6.) Tim has a rectangular prism with a length of 10 centimeters, a width of 2 centimeters, and an unknown height. He needs to build another rectangular prism with a length of 5 centimeters and the same height as the original prism. The volume of the two prisms will be the same. Find the width, in centimeters, of the new prism.