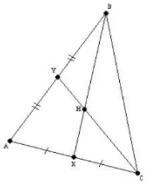
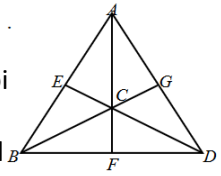
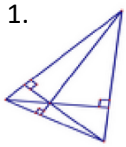
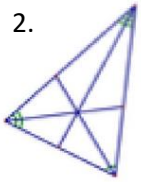
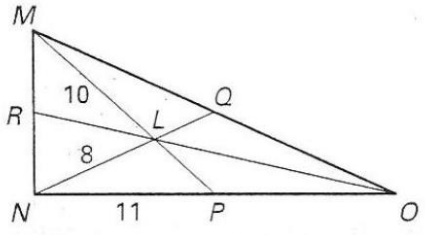
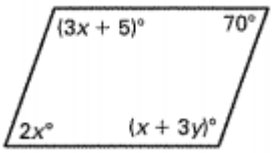
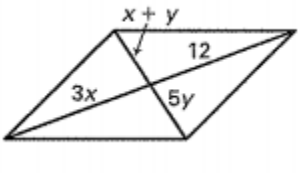
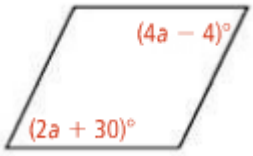
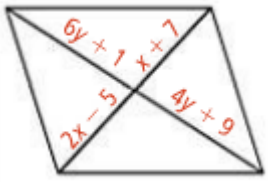
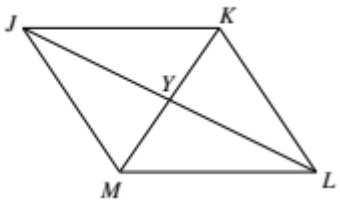
Centers of Triangles

Review	*Example*	*Practice*
• Centroid: Intersection of Medians • Orthocenter: Intersection of Altitudes • Incenter: Intersection of Angle bisectors • Circumcenter: Intersection of perpendicular bisectors	 This is the centroid because the segments are medians. C is the centroi  If AC = 12, find AC is twice the length of CF, so CF =12/2 = 6 Therefore, the length of AF is 12 + 6 = 18.	Identify the segments and the point of concurrency. 1.  Segment: _____ Point: _____ 2.  Segment: _____ Point: _____ 3. L is the centroid of the triangle  Find the lengths: PO = _____ LQ = _____ MP = _____ NQ = _____

Parallelograms

Parallelograms:	The following shapes are parallelograms. Solve for the variables.	1. The following shapes are parallelograms. Solve for the variables.
• Opposite sides are parallel and congruent. • Opposite angles are congruent. • Consecutive angels are supplementary. • Diagonals bisect each other.	 2x = 70 x = 35 3x+5 = x+3y 3(35)+5 = (35)+3y 110 = 35+3y 75 = 3y 25 = y  3x = 12 x = 4 x + y = 5y (4) + y = 5y 4 = 4y 1 = y	  2. $KM = 23.4$ Find YM 

Volume

Know your area and volume formulas

-Prism

$V = Bh$

-Cylinder

$V = \pi r^2 h$

-Pyramid

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

-Cone

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

-Sphere

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

Class notes

1. Two spheres M and N have volumes of 250 cubic cm and 750 cubic cm respectively. Find the ratio of their radii.

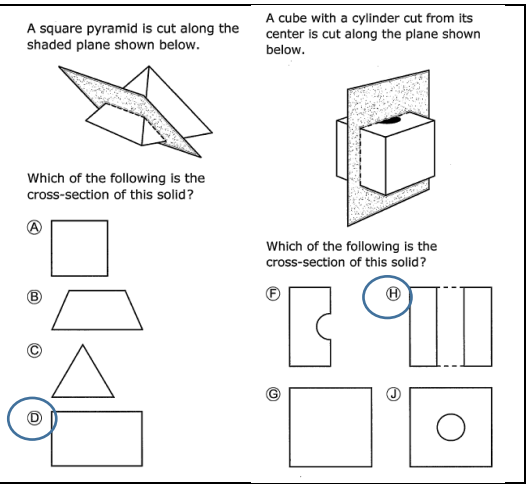
2. Two metal cubes with sides of 4 cm are melted and casted into a spherical ball. Find the radius of sphere so formed.

3. A cone has a volume of 317π cm^3 and a height of 5 cm. Find the diameter of the base.

4. You have been asked by your school to design a brick planter that will be used by classes to plant flowers. The planter will be built in the shape of a right rectangular prism with no bottom so water and roots can access the ground beneath. The exterior dimensions are to be $\mathbf{12\ ft.} \times \mathbf{9\ ft.} \times \mathbf{2\frac{1}{2}\ ft.}$ The bricks used to construct the planter are $\mathbf{6\ in.}$ long, $\mathbf{3\frac{1}{2}\ in.}$ wide, and $\mathbf{2\ in.}$ high. What is the volume of the bricks that form the planter?

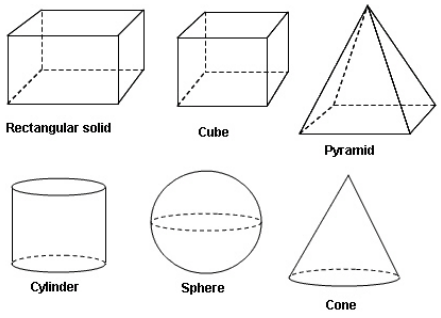
Cross sections

Cross sections are the 2 dimension figure formed when cutting a 3 dimensional figure with a plane.



1. If a square pyramid was cut parallel to its base, what shape would the cross section be?

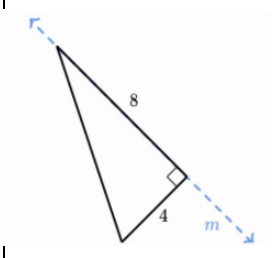
2. Which shape would have a circular cross section?



Rotations

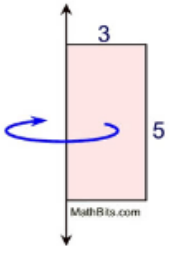
Rotations are the 3 dimensional figure formed when rotating a 2 dimension figure about an axis.

What figure is formed when rotating the triangle about line *m*?



Cone with a height of 8 units and radius of 4 units.

What figure is formed when rotating the rectangle about the line as shown?



Density		
Density: Density = quantity / Volume	A block of wood 3 cm on each side has a mass of 27 g. What is the density of the block? v = l x w x h v = 3 cm x 3 cm x 3cm v = 27 cm^3 D = m/v D = 27 g / 27 cm^3 Density = 1 g/cm^3	1. A wooden block has a mass of 562 g and a volume of 72 cm^3. What is the density? 2. A soda has a volume of 560 mL and a density of 3.2 g/mL. What is the mass?