U10H Construct & Transform Study Guide   Name: ______________________Per: _______

Assn	Learning Objective	A Day	B Day	Done
10SG	Constructions and Transform	Feb 7	Feb 8	
10.1	Lines of Symmetry and Bisect	Feb 11	Feb 12	
10.2	Translate	Feb 13	Feb 14	
10.3	Reflections	Feb 15	Feb 19	
	A/B Day GIVE OUT TERM FINAL REVIEW	Feb 20	Feb 20	
10.4	Rotations	Feb 21	Feb 22	
10.5	Rotations Part 2	Feb 25	Feb 26	
10R	Unit 10 Review	Feb 27	Feb 28	
	Unit 10 EMT	Mar 1	Mar 5	
	Term 3 Final	Mar 6	Mar 7	

Targets	Sample Question	Help	Meh	Master	Assn
Construct a perpendicular bisector of a segment	Given a line segment, construct a perpendicular bisector using a compass and straight edge				10.1, 10.2
Construct an angle bisector	Given an angle, construct a bisector using a compass and straight edge				10.3
Translations	Using the following graph, translate the image right 3 and down 7				10.1, 10.2
Rotations	Suppose, Triangle MNO with vertices M (-2, 2), N(0, -2), O(1, 0) Rotate 180º about (2, 3)				10.4
Reflections	Suppose rectangle ABCD with A(2, -4), B(4, -6), C(7, -3) and D(5, -1). Reflect over the x-axis				10.2, 10.4
Lines of Symmetry	State whether the figure appears to have line symmetry. If so, draw all lines of symmetry.				10.1, 10.2

Vocabulary

Bisect: ____

Perpendicular Bisector: ______________________________________

Angle Bisector: ____

Line of Symmetry: ____

Diagonal: ____

Rotational Symmetry: ____

Rigid Transformations: _______________________________________

Translation: ____

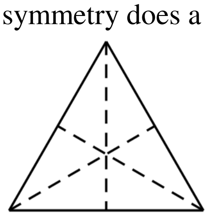
Reflection: ____

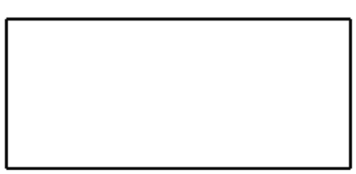
Rotation:____

Symmetry

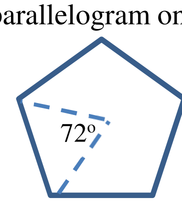
The ____________ **of symmetry** in a geometric figure splits the figure in half and reflects the figure onto _____________. A figure that can be copied onto itself by rotating it said to have **rotational** ________________. A **diagonal** of a polygon is any line segment that connects non-consecutive ____________________ of the image.

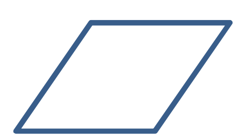
An equilateral triangle has 3 lines of symmetry. How many lines of symmetry does a rectangle have? ____ Draw them:





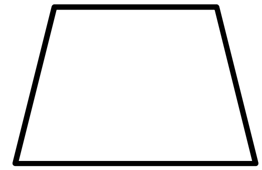
A pentagon can be carried onto itself ______times with ______degree rotations. What degree **rotation** carries a parallelogram onto itself? ___________





For the trapezoid, find the following:

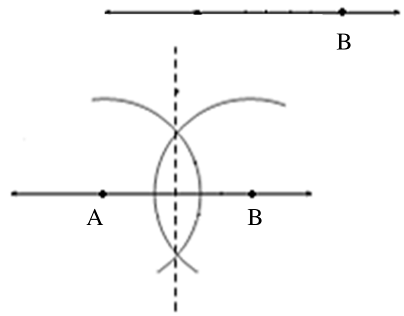
Lines of Symmetry: _____ # of Diagonals: _____ Angle of Rotation: ______



<u>Construct a Perpendicular Bisector</u>

Make a Segment Method

1. Draw a line segment and place ______ points on the line (or use the endpoints of the segment).
   Label these points A and B.
2. Place the needle of the ___________ on point A and the pencil end more than halfway between the points.
3. Make an _______.
4. Repeat steps 2 & 3 with the point of the _______ on point B.
5. Connect the intersection points of the two arcs.

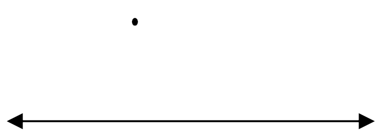


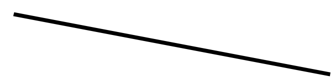
Make a Kite Method

1. Make a dot (or use the given dot).
2. Measure the distance from the end of the segment to the dot with your compass and make an arc.
3. Repeat from the other end of the segment.
4. Connect the intersection points of the two arcs.

Construct

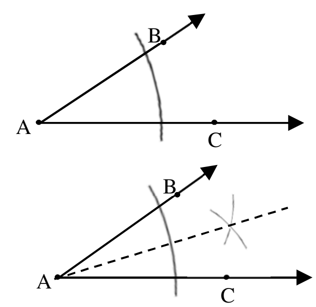
perpendicular line passing through the point a perpendicular bisector.



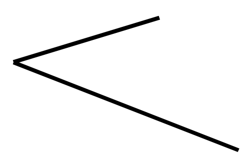


<u>Construct an Angle Bisector</u>

1. Given an __________ $\angle ABC$.
2. Create an __________that intersects $\overline{AB}$ and $\overline{AC}$.
3. From one ________________ point, construct an arc on the inside of the angle.
4. Repeat step 4 with the other __________________ point.
5. Connect the intersection point of the two arcs with the vertex of the _________.



Construct the Angle Bisectors for the angles below.

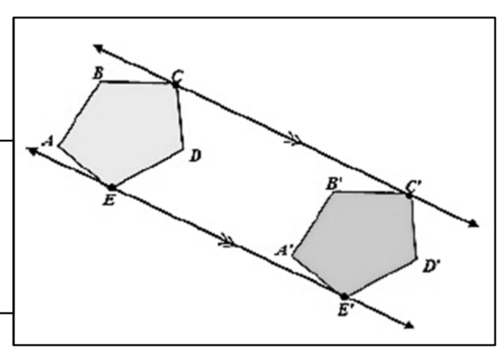


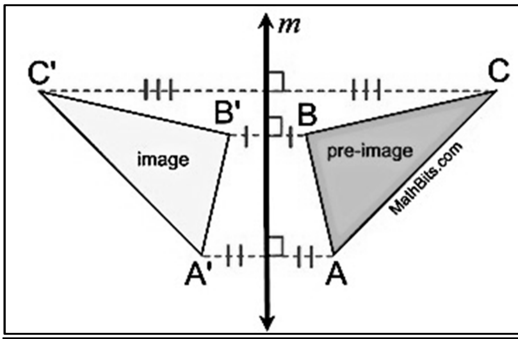
<u>Transformations</u>: There are 4 main kinds of transformations:

translation, reflection, rotation, and dilation.

The first 3 all preserve size AND proportion so the figures are congruent. These are called rigid transformations.

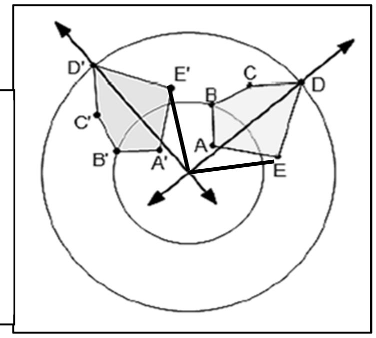
Translation: (or "__________".) is written like (x + 2, y – 1) "slides" the figure two units to the right [(x + 2)] and down one unit [(y – 1)]. Notice that the lines CC' and EE' are parallel since all points move in the same _________________ (have them same slope).





Reflection: (or "__________") creates a mirror image.
Points of reflection (like B and B') must be
1) on a line that is ____________________ to the
line of _______________ and
2) equidistant to the _________ of symmetry.

Rotation: (or "___________"). The image "turns" about a __________. To rotate 90°, the slopes of the lines from corresponding vertices to the point of rotation are negative _________________. Each point on the figure rotates to another point on the same arc. To rotate other than 90°, rotate all points that same angle measure on an arc with the center at the _______________ of rotation.



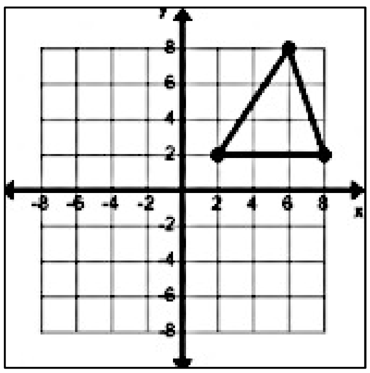
- **Complete the rigid transformations on the triangle. Label it ABC.**

1. Rotate 270° CCW about the origin and label $\Delta A'B'C'$

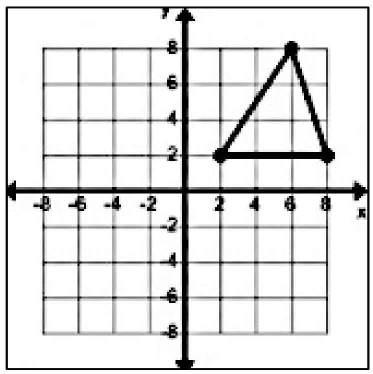
Reflect over $y = -x$, label $A''B''C''$

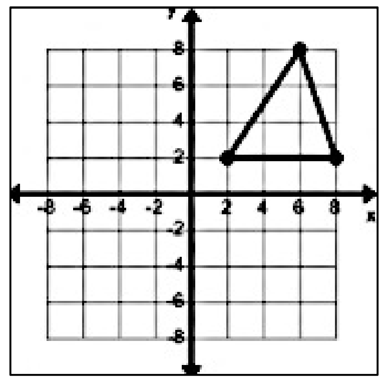
Translate the image $(x + 2, y - 10)$ and label $\Delta A'''B'''C'''$

2.

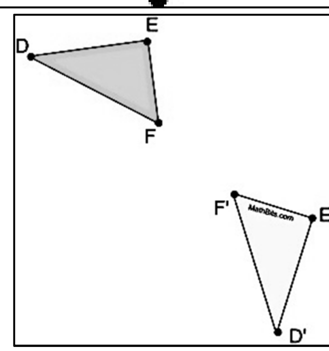


3.



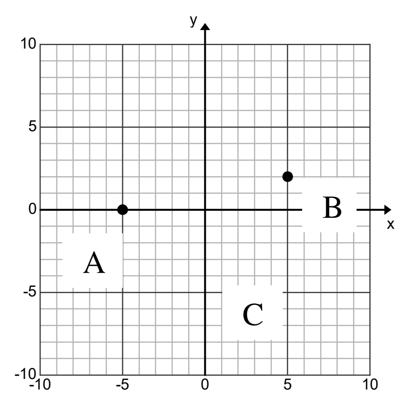


- **Use ΔDEF and $\Delta D'E'F'$.**
  1. Draw the lines that connects E to E', D to D' and F to F'.
  2. What do you know about these lines?___________________________
  3. Construct (compass and straightedge) the line of reflection for the two triangles.
  4. What do you know about the line of reflection and the lines that you connecting the points? _______________________________________



- **Mark all the points of rotation that take A onto B.**
- Find the **equation** for that line **ALGEBRAICALLY.**

- **Mark all the points of rotation that take B onto C.**
- Find the **equation** for that line **ALGEBRAICALLY.**



EC. Find the point of rotation that takes A onto B onto C.