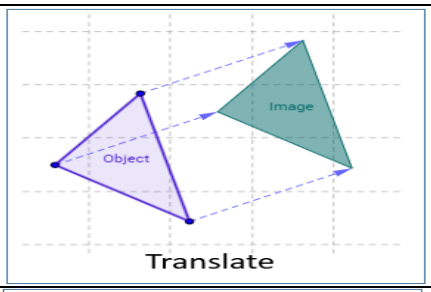
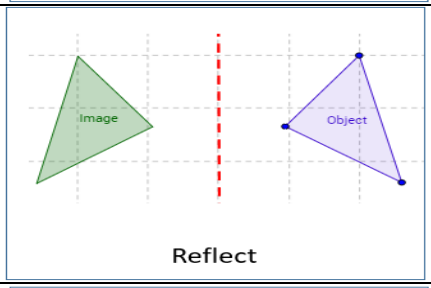
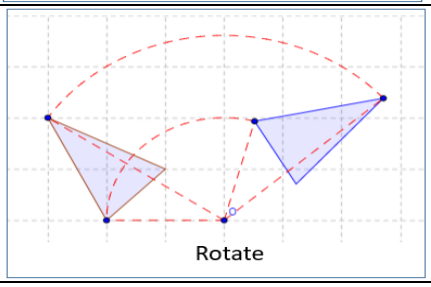
UNIT 2 STUDY SHEET – RIGID MOTIONS

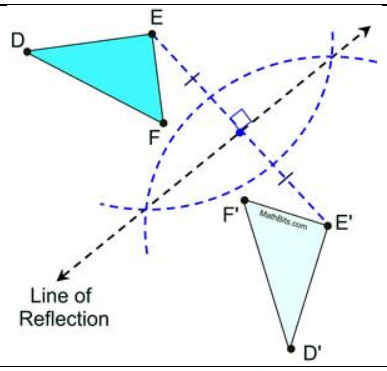
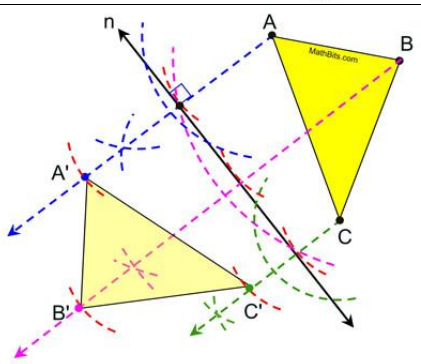
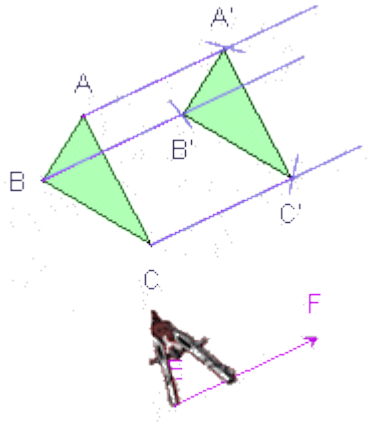
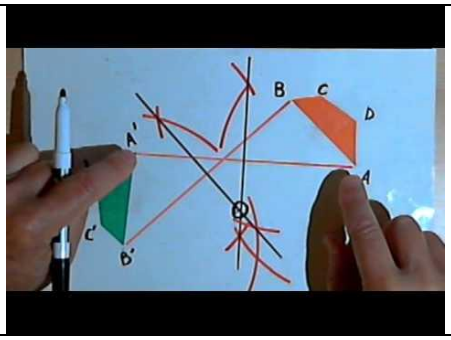
TOPIC #1: VOCABULARY

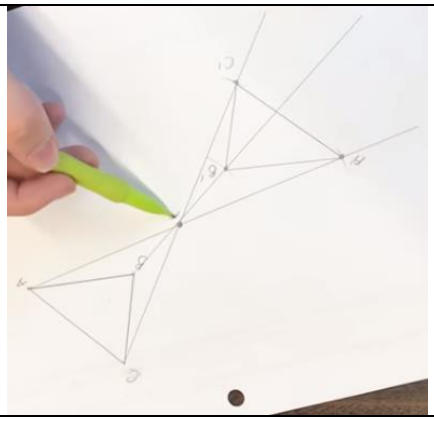
WORD	DEFINITION
CONGRUENCE	Same size, same shape
CORRESPONDENCE	A word we use to describe sides/angles that map onto each other from a pre-image to an image
BASIC RIGID MOTION	A transformation that produces congruent figures
PRE-IMAGE	The original image
IMAGE	Where you end up (The one with the primes)
REGULAR POLYGON	A 2D shape with all congruent sides and angles
ORIENTATION	Clockwise or Counterclockwise (follow the letters!)

TOPIC #2: BASIC RIGID MOTIONS

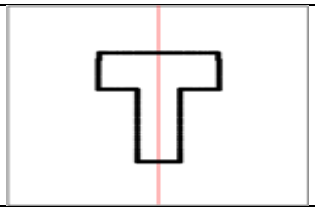
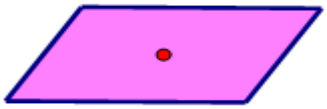
	We **TRANSLATE** along **VECTORS (UP, DOWN, LEFT or RIGHT)**	*(same orientation)*
	We **REFLECT** over **LINES**	*(opposite orientation)*
	We **ROTATE** around **POINTS** by a certain number of **DEGREES** in either a **CLOCKWISE** or **COUNTER-CLOCKWISE** direction	*(same orientation)*

TOPIC #3: CONSTRUCTIONS **Watch YouTube videos for help!**

NAME OF CONSTRUCTION	STEPS TO COMPLETE CONSTRUCTION	EXAMPLE
LINE OF REFLECTION	1. Using your straight edge, connect two corresponding points 2. Construct a perpendicular bisector	
REFLECTION OVER A LINE	1. From point A, extend your compass slightly below the line of reflection. 2. Make a semi-circle. Mark two points of intersection. 3. From those points, construct a perpendicular bisector 4. Mark the midpoint 5. Measure the distance between the midpoint and the original point A 6. Mark that distance on the other side of the perpendicular bisector 7. Repeat for all other points (B and C)	
TRANSLATION	1. Expand compass length of vector 2. From each vertex, draw an arc that length. 3. Place your compass on the end of the vector and extend the width to one of the vertices 4. Without changing the width, move the needle to the arrow of the vector and make an arc that intersects with the original arc. 5. Repeat this process for all vertices and connect.	
CENTER OF ROTATION	1. Connect two corresponding points 2. Make a perpendicular bisector 3. Connect another pair of corresponding points 4. Make a perpendicular bisector 5. Mark the point of intersection, this is your center of rotation	

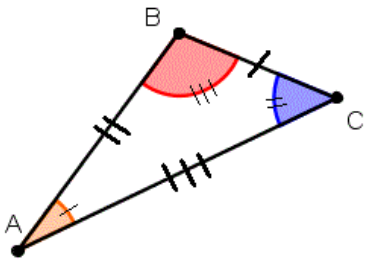
ROTATION THROUGH A POINT 180°	1. Extend a line through A and the center of rotation P 2. Measure the distance between PA 3. Mark that distance on the opposite side of the line. Label A' 4. Repeat process for B and C 5. Connect A'B'C'	

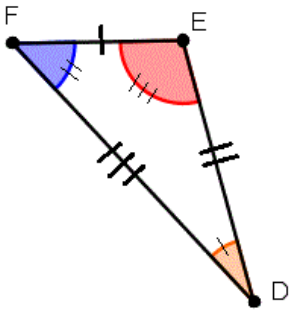
TOPIC #4: SYMMETRY

TYPE OF SYMMETRY	CHARACTERISTICS	EXAMPLE	NON-EXAMPLE
LINE (REFLECTIONAL)	When you can divide a shape in half and have two mirror images		
ROTATIONAL $\frac{\mathbf{360}}{\boldsymbol{n}}$ $n = \#of\ sides\ in\ a\ regular\ polygon$	When you can rotate a figure a certain number of degrees so the image looks like the original figure		
POINT	When you can turn something upside down and it looks the same (180° rotation)		

TOPIC #5: CONGRUENCE AND CORRESPONDENCE

MATCH THE ORDER OF THE CONGRUENCE STATEMENT! $\Delta ABC \cong \Delta DEF$





CORRESPONDING ANGLES	CORRESPONDING SIDES
$< A \cong < D$ $< B \cong < E$ $< C \cong < F$	$AB \cong DE$ $BC \cong EF$ $AC = DF$

CONGRUENCE STATEMENT: Why are ΔABC and ΔDEF congruent?

"$\Delta ABC \cong \Delta DEF$ because a <u>(rotation/reflection/translation)</u> is a rigid motion which preserves distance and angle measure."

$\uparrow MEMORIZE\ THIS! \uparrow$