REVIEW OF TRANSFORMATIONS
GEOMETRY

Rigid motion – A transformation that preserves distance and angle measure (***the shapes are congruent, angles are congruent)***.

Isometry **–** A transformation that preserves distance (***the shapes are congruent)***.

Direct Isometry **–** A transformation that preserves orientation, the order of the lettering (ABCD) in the figure and the image are the same, either both clockwise or both counterclockwise (***the shapes are congruent)***.

Opposite Isometry **–** A transformation that ***DOES NOT*** preserve orientation, the order of the lettering (ABCD) is *reversed*, either clockwise or counterclockwise becomes clockwise (***the shapes are congruent)***.

Composition of transformations **–** is a combination of 2 or more transformations. In a composition, you perform each transformation on the image of the preceding transformation. *Example*: $r_{x-axis} \circ R_{O,180^\circ}$, the little circle tells us that this is a composition of transformations, we also execute the transformations from right to left ← (backwards).

If you would like a visual of this information or if you would like to quiz yourself, go to http://www.mathsisfun.com/geometry/transformations.html.

Line Reflection	**Point Reflection**	**Translations (Shift)**	**Rotations (Turn)**	**Glide Reflection**	**Dilations (Multiply)**
Rigid Motion	Rigid Motion	Rigid Motion	Rigid Motion	Rigid Motion	Not a rigid motion
Opposite isometry	Direct isometry	Direct isometry	Direct isometry	Opposite isometry	NOT an isometry
Reverse orientation	Same orientation	Same orientation	Same orientation	**Reverse** orientation	Same orientation
Properties preserved: 1. Distance 2. Angle measure 3. Parallelism 4. Collinearity 5. Midpoint	Properties preserved: 1. Distance 2. Angle measure 3. Parallelism 4. Collinearity 5. Midpoint	Properties preserved: 1. Distance 2. Angle measure 3. Parallelism 4. Collinearity 5. Midpoint	Properties preserved: 1. Distance 2. Angle measure 3. Parallelism 4. Collinearity 5. Midpoint	Properties preserved: 1. Distance 2. Angle measure 3. Parallelism 4. Collinearity 5. Midpoint	Properties preserved: 1. Angle measure 2. Parallelism 3. Collinearity 4. Midpoint Lengths **NOT** the same
Notation: $r_{x-axis}(x,y)=(x,-y)$ $r_{y-axis}(x,y)=(-x,y)$ $r_{y=x}(x,y)=(y,x)$ $r_{y=-x}(x,y)=(-y,-x)$	Notation: $r_{origin}(x,y)=(-x,-y)$	Notation: $T_{a,b}(x,y)=(x+a,y+b)$	Notation: $R_{90^\circ}(x,y)=(-y,x)$ $R_{180^\circ}(x,y)=(-x,-y)$ $R_{270^\circ}(x,y)=(y,-x)$	Reflection and Translation *the translation HAS to be parallel to the line of reflection.	Notation: $D_k(x,y)=(kx,ky)$