Transformation Review:

**Transformation** Moves or changes a geometric image in some way

**Pre-image** Original figure prior to applying a transformation

**Image** The figure after transformation has been performed

**Translation** Moves every point of a figure the same distance in the same direction (“slide”)

**Reflection** Creates a mirror image over a line of reflection (“flip”)

**Rotation** Turns a figure about a fixed point called the center of rotation (“turn”)

**Dilation** Reduces or enlarges a figure to a similar figure

1) Which figure is a **TRANSLATION** of \( \triangle A \)? _____

2) Which figure is a **REFLECTION** of \( \triangle A \)? _____

3) Which figure is a **ROTATION** of \( \triangle A \)? ______

**Translations**
- Move pre-image points the same horizontal and vertical units
- Translations form isometries (congruent figures)
- Rules describe horizontal and vertical changes to make

*Example:* Graph quadrilateral \( ABCD \) with vertices \( A(-1, 2) \), \( B(-1, 5) \), \( C(4, 6) \), and \( D(4, 2) \). Find the image of each vertex after the translation \((x, y) \rightarrow (x+3, y-1)\)

**Vectors**
- A vector is a quantity that has direction and magnitude (size)

- Write vector \( \overrightarrow{AB} \)

- Component form lists horizontal distance first, then vertical distance:

- If the component form of \( \overrightarrow{FG} = <5, 3> \), then the vector is formed by moving 5 units to the right and 3 units up from its initial point

- Examples: Name the vector and find its component form...

  a) ___________________________________________

  b) ___________________________________________
Using Vectors to Translate Figures

- The vertices of $\triangle ABC$ are $A(0, 3)$, $B(2, 4)$, and $C(1, 0)$. Translate $\triangle ABC$ using vector $<5, -1>$.

You try...

1) The vertices of $\triangle PQR$ are $P(-2, 3)$, $Q(1, 2)$, and $R(3, -1)$. Graph the pre-image and image of the triangle using prime notation given the following rules or vectors...
   a) $(x, y) \rightarrow (x + 4, y + 6)$
   b) $<-2, -5>$

2) $\triangle A'B'C'$ is the image of $\triangle ABC$. Write a rule for the translation. Then write the vector that describes the transformation.
   a) 
   b)