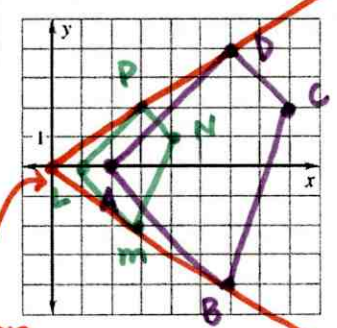


Similarity
Perform ~~Congruence~~ Transformations

Vocabulary	Definition	Example
<p>DILATION</p>	<p>A dilation is a transformation that stretches or shrinks a figure to create a <u>similar figure</u>.</p>	<p>Draw a dilation of quadrilateral $ABCD$ with vertices $A(2, 0)$, $B(6, -4)$, $C(8, 2)$, and $D(6, 4)$. Use a scale factor of $\frac{1}{2}$.</p> <p>First draw $ABCD$. Find the dilation of each vertex by multiplying its coordinates by $\frac{1}{2}$. Then draw the dilation.</p> <p> $(x, y) \rightarrow \left(\frac{1}{2}x, \frac{1}{2}y\right)$ $A(2, 0) \rightarrow L(1, 0)$ $B(6, -4) \rightarrow M(3, -2)$ $C(8, 2) \rightarrow N(4, 1)$ $D(6, 4) \rightarrow P(3, 2)$ </p> 
<p>CENTER of DILATION</p>	<p>In a dilation, a figure is enlarged or reduced with respect to a fixed point called the center of dilation.</p>	

<p>SCALE FACTOR of DILATION</p>	<p>The scale factor k of a dilation is the ratio of the side length of the <u>image</u> to the corresponding side length of the <u>original</u> figure.</p> <p>$k = \text{scale factor}$</p>	<p>image = new pre-image = original/old</p> $k = \frac{\text{image}}{\text{pre-image}} = \frac{\text{New}}{\text{old}}$ <p>$\triangle ABC \quad \triangle A'B'C'$</p> $k = \frac{A'B'}{AB}$
<p>COORDINATE NOTATION for a DILATION</p>	<p>You can describe a dilation with respect to the origin with the notation <u>$(x, y) \rightarrow (kx, ky)$</u>, where k is the scale factor.</p>	<p>$k = 2 \quad (x, y) \rightarrow (2x, 2y)$</p> <p>$A(-3, 5) \quad A'(2(-3), 2(5))$</p> <p><u>$A'(-6, 10)$</u></p>
<p>REDUCTION</p>	<p>If $0 < k < 1$, then the dilation is a reduction.</p>	<p>$k = \frac{1}{2}$</p> <p>$A(12, -7)$</p> <p>$A'(6, -3.5)$</p>
<p>ENLARGEMENT</p>	<p>If $k > 1$, then the dialtion is an enlargement.</p>	<p>$k = 3$</p> <p>$A(-4, 1)$</p> <p>$A'(-12, 3)$</p>