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# Transformation Sequences

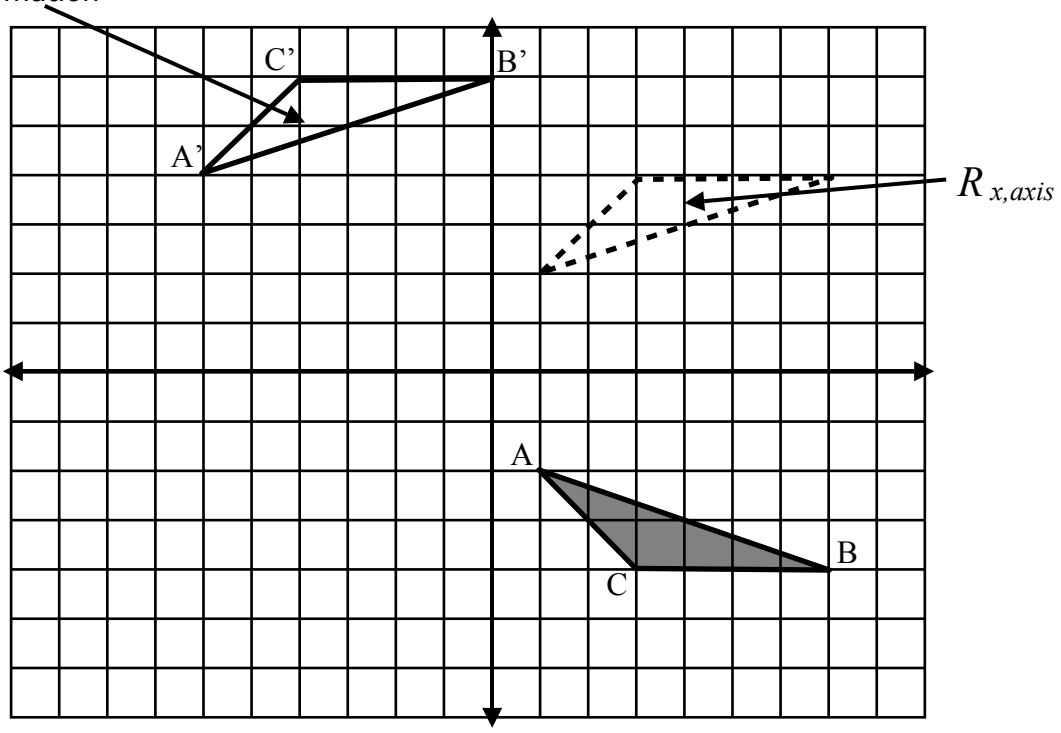
**Transformation Sequence:** A transformation sequence is 2 or more transformations performed one after the other on the same pre-image. Here is an example.

First perform this transformation. → $R_{x\ axis} \circ T_{<-7,2>}$ ← Then perform this transformation.

This symbol indicates a transformation sequence.

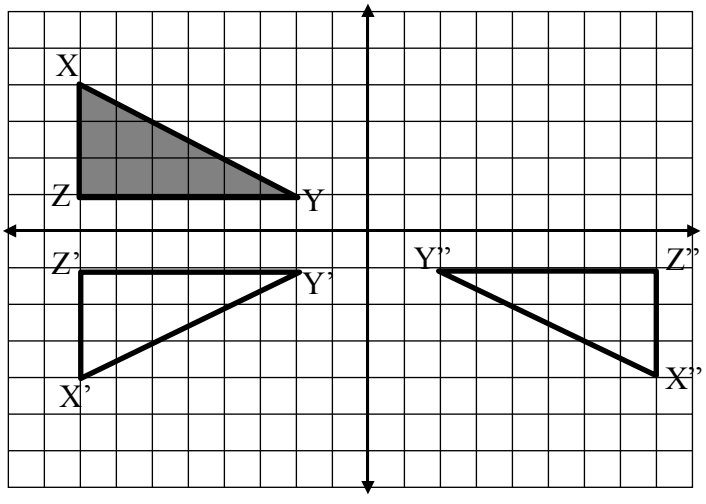
$T_{<-7,2>}$

Final transformation




Sometimes you might be asked to plot each stage of the transformation. That would look like this.

**Plot each stage of the transformation $R_{x,axis} \circ R_{y,axis}$.**

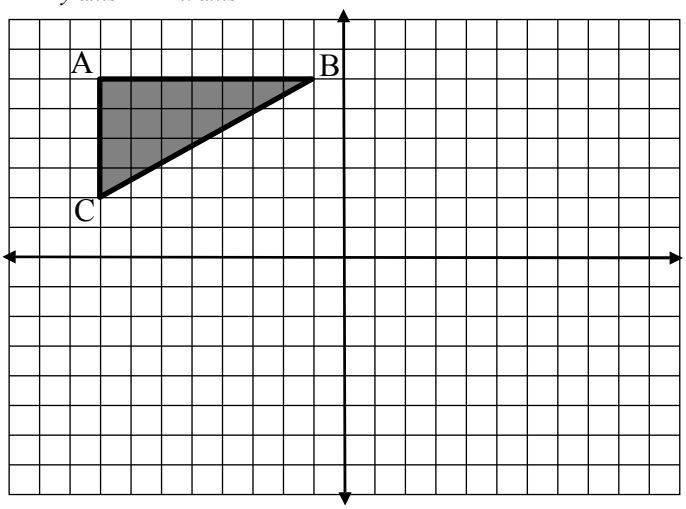



In the example to the left notice that the first transformation has the lables X', Y', and Z' ("x prime," "y prime," and "z prime"). The second one has the lables X" Y" and Z". We say "x double-prime," "y double-prime," and "z double-prime."

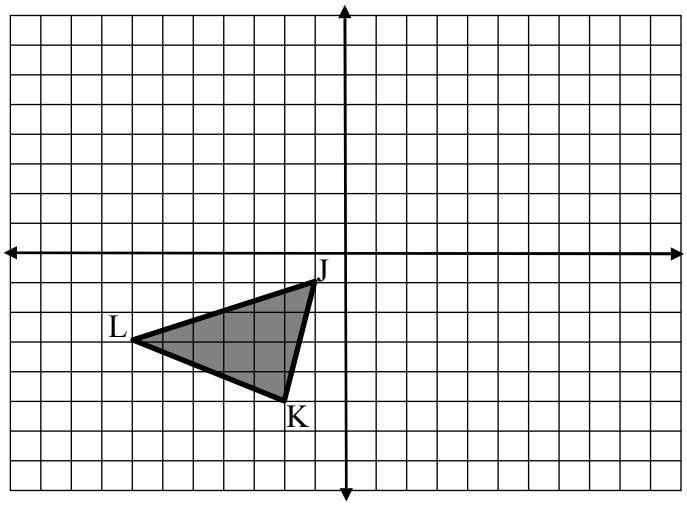
Name:_____ Date:_____ Period:_____ Score:_____

**Directions:** Perform the following transformation sequences. Plot each stage of the sequence. Use patty paper, geometry software, or any other method.

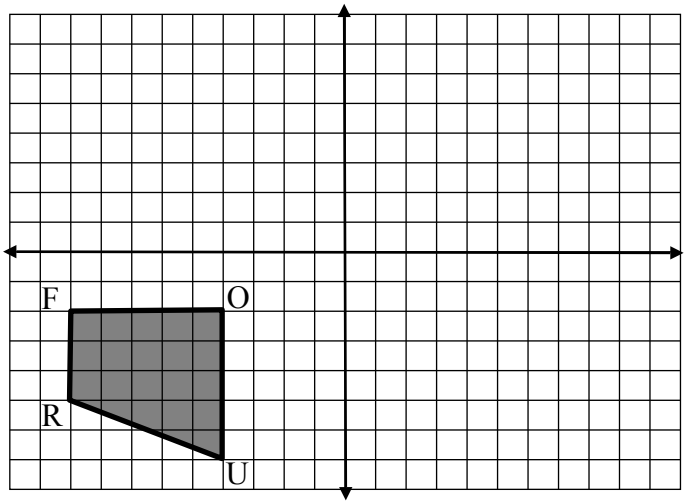
**1.** $R_{y\ axis} \circ R_{x\ axis}$



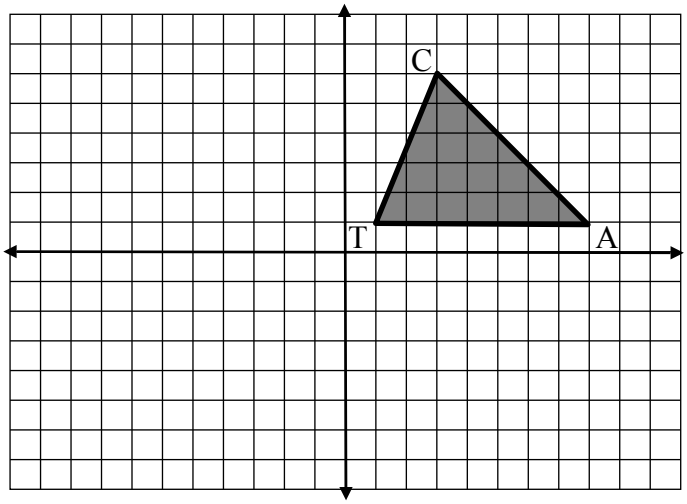

**2.** $R_{O,\ 90°} \circ R_{x\ axis}$



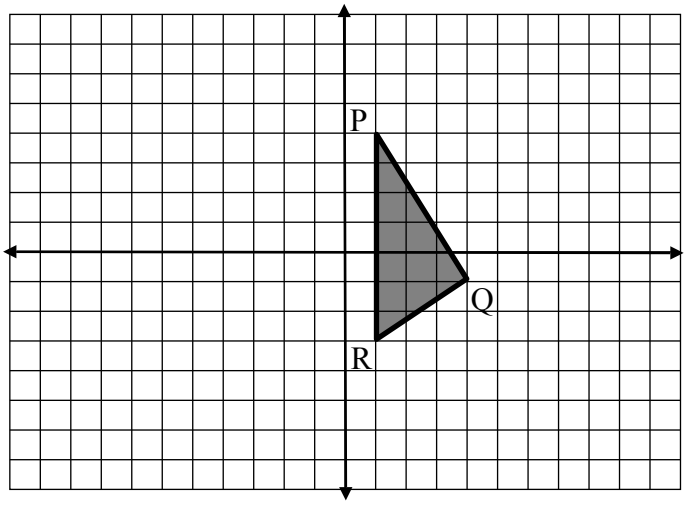

**3.** $T_{<2,\ 6>} \circ R_{O,\ 180°}$



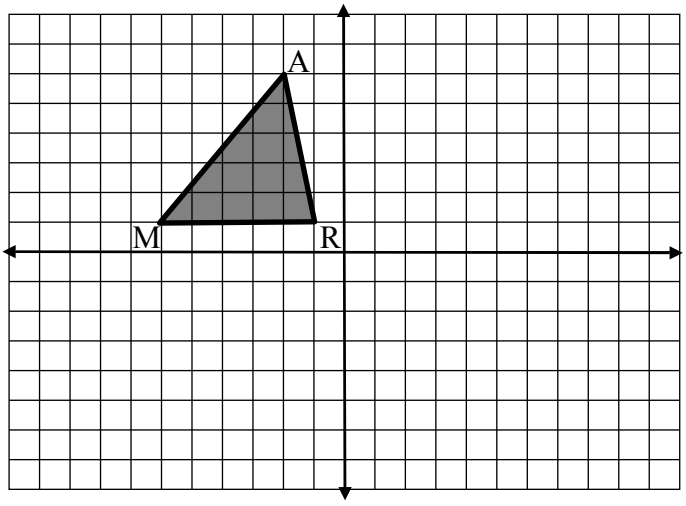

**4.** $R_{O,\ 90°} \circ R_{O,\ 90°}$




**4.** $R_{y\ axis} \circ R_{x=-5}$




**4.** $R_{x\ axis} \circ R_{O,\ 90°}$



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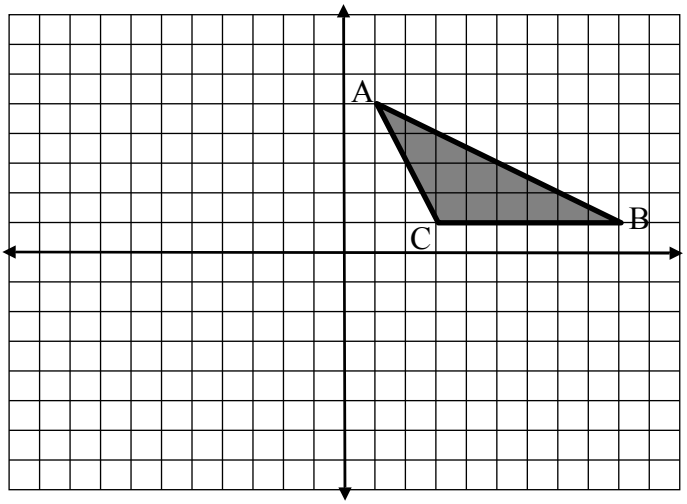
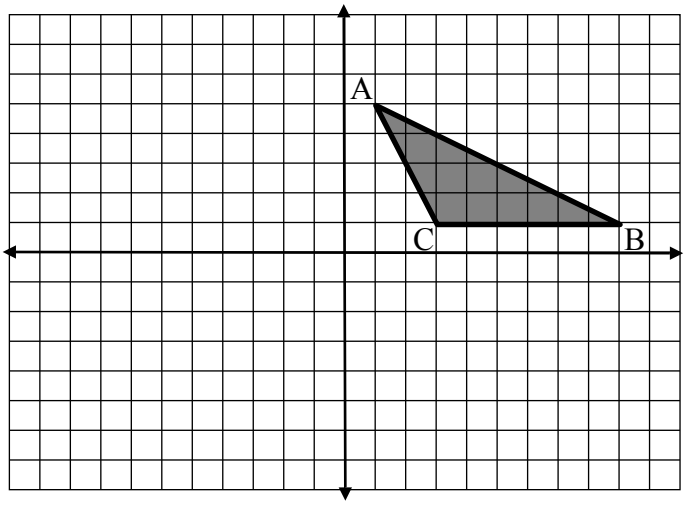
**Directions:** Perform the following transformation sequences. Plot each stage of the sequence. Use patty paper, geometry software, or any other method, and answer the questions .

**1.** What do you think? Does the order in which you perform a transformation sequence effect the final image? Explain your reasoning.

**2a.** $R_{O,\ 180°} \circ R_{x\ axis}$

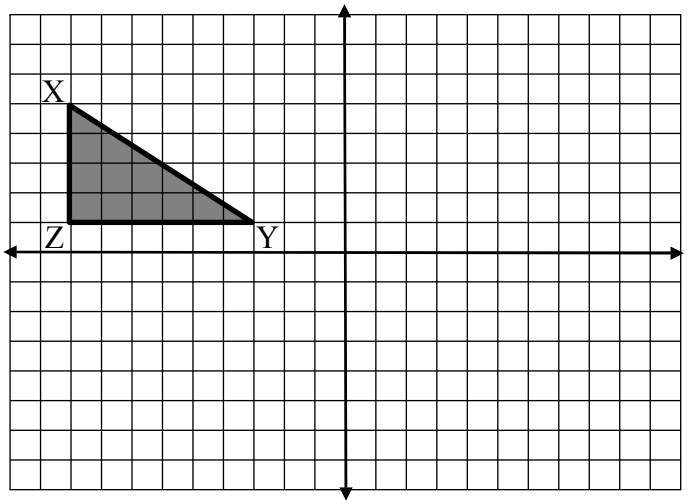



**2b.** $R_{x\ axis} \circ R_{O,\ 180°}$

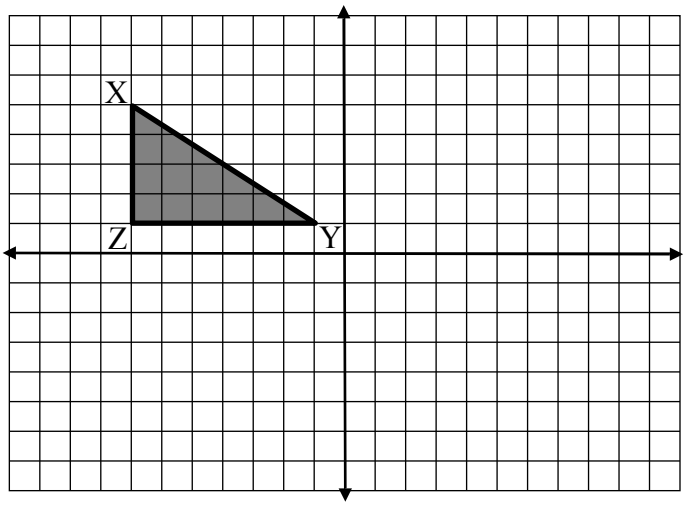



**2c.** Did performing the same transformation sequence in the reverse order change the position of the final image? Why?

**3a.** $T_{<8,1>} \circ R_{x\ axis}$




**3a.** $R_{x\ axis} \circ T_{<8,1>}$



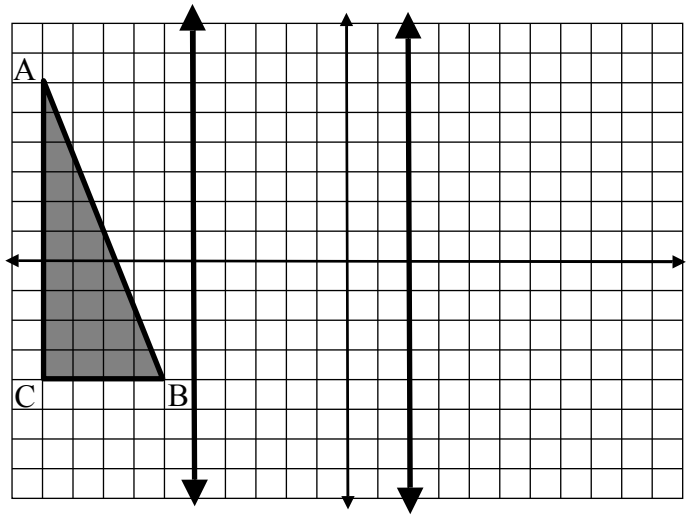

**2c.** Did performing the transformation in the reverse order change the position of the final image? Why?

Name:_____ Date:_____ Period:_____ Score:_____

**Directions:** Perform the following transformation sequences. Plot each stage of the sequence. Use patty paper, geometry software, or any other method, and answer the questions .

**1.** What do you think will happen if you reflect a figure twice over two parallel lines?

**2a.** $R_{x=-5} \circ R_{x=2}$

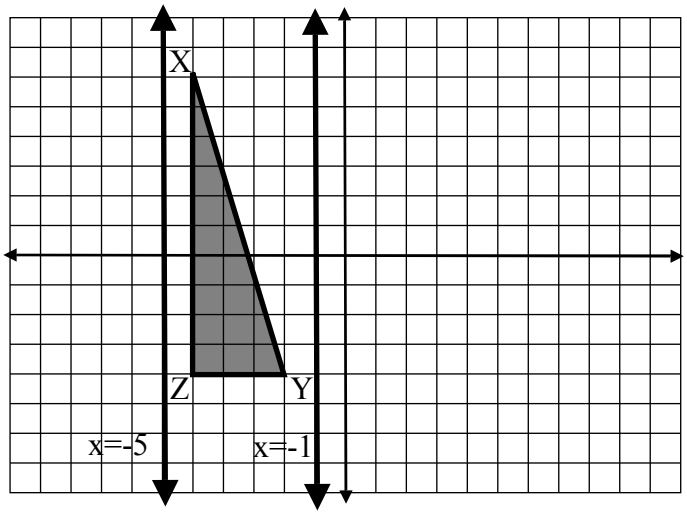



**2b.** What kind of transformation is the result from ABC to A"B"C" ?

**2c.** Describe the transformation. What is the distance between A and A"?

**2d.** What is the relationship between the distance of the transformation and the distance between the parallel lines?

**3a.** $R_{x=-5} \circ R_{x=-1}$




**3b.** What kind of transformation is the result from XYZ to X"Y"Z" ?

**3c.** Describe the transformation. What is the distance between X and X"?

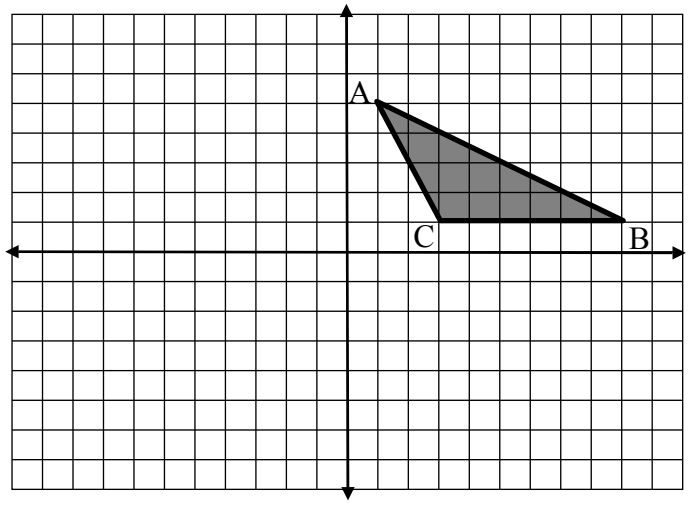
**3d.** What is the relationship between the distance of the transformation and the distance between the parallel lines?

Name:_____ Date:_____ Period:_____ Score:_____

**Directions:** Perform the following transformation sequences. Plot each stage of the sequence. Use patty paper, geometry software, or any other method, and answer the questions .

**1.** What do think will happen if you reflect a figure twice over two intersecting lines?

**2a.** $R_{x\ axis} \circ R_{y\ axis}$

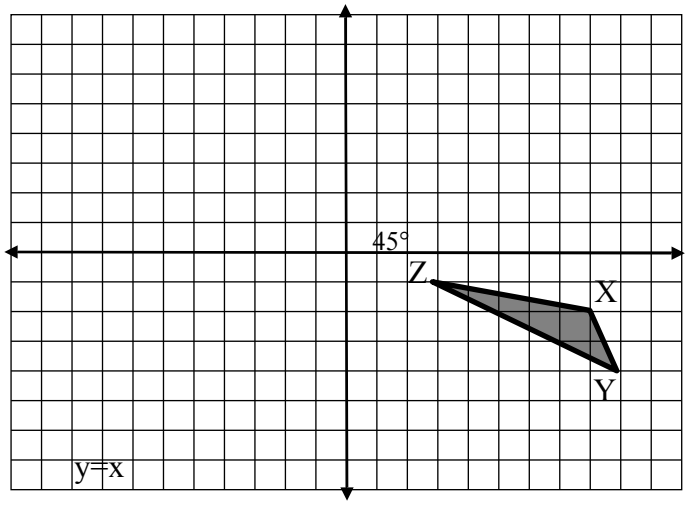



**2b.** What kind of transformation is the result from ABC to A"B"C" ?

**2c.** How did you know what kind of transformation it was?

**2d.** What is the relationship between the angle that the two axis intersect and the transformation?

**3a.** $R_{x\ axis} \circ R_{y=x}$




**3b.** What kind of transformation is the result from XYZ to X"Y"Z" ?

**3c.** How did you know what kind of transformation it was?

**3d.** What is the relationship between the angle that the two axis intersect and the transformation?