

Geometry

Double Reflection over Parallel Lines

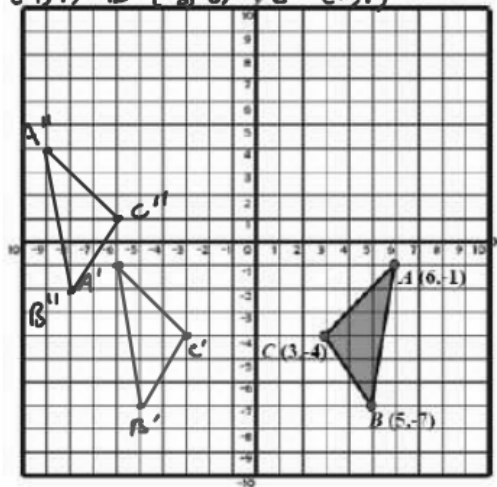
Name _____

Date _____ Per _____

COMPOSITE TRANSFORMATIONS

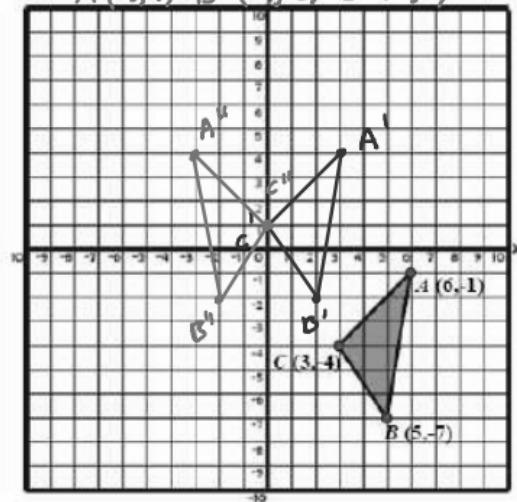
1a) $T_{(-3,5)} \circ R_{y\text{-axis}} (\triangle ABC)$

$A''(-9,4)$ $B''(-8,-2)$ $C''(4,1)$



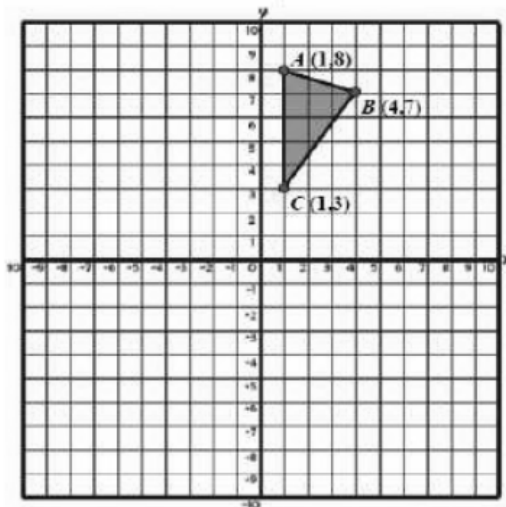
b) $R_{y\text{-axis}} \circ T_{(-3,5)} (\triangle ABC)$

$A''(-3,4)$ $B''(-2,-2)$ $C''(0,1)$

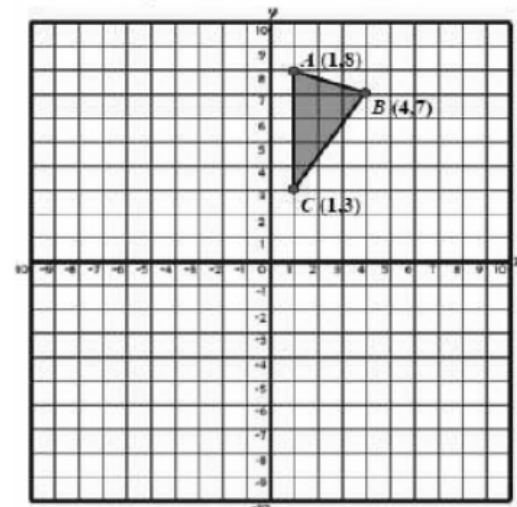


c) Did doing the transformations in a different order matter? Explain why?

2a) $R_{x\text{-axis}} \circ r_{90^\circ,0} (\triangle ABC)$



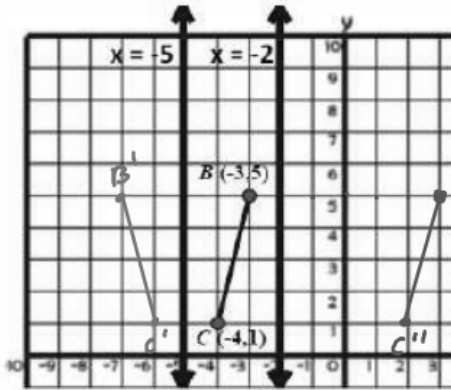
b) $r_{90^\circ,0} \circ R_{x\text{-axis}} (\triangle ABC)$



c) Did doing the transformations in a different order matter? Explain why?

DOUBLE REFLECTIONS OVER PARALLEL LINES – Plot each of the stages of the composite transformation.

3a) $R_{x=-2} \circ R_{x=-5}(\overline{BC})$ (Reflection over $x = -5$ followed by a reflection over $x = -2$)



Circle the resultant transformation from \overline{BC} to $\overline{B''C''}$

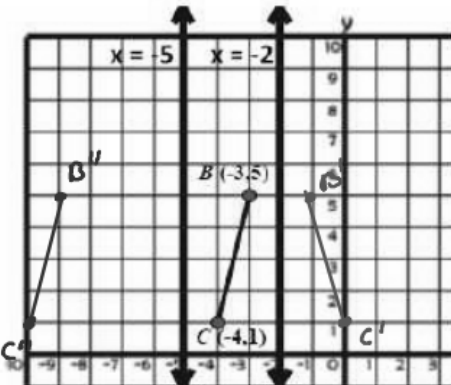
Rotation Reflection Translation

What is the distance BB'' ? 6

What is the distance between the parallel lines? 3

How do these two distances relate to each other?

b) $R_{x=-5} \circ R_{x=-2}(\overline{BC})$ (Reflection over $x = -2$ followed by a reflection over $x = -5$)



Circle the resultant transformation from \overline{BC} to $\overline{B''C''}$

Rotation Reflection Translation

What is the distance BB'' ? 6

What is the distance between the parallel lines? 3

How do these two distances relate to each other?

CONJECTURE (Take a guess)

A **double reflection** over parallel lines seems to produce a Translation (type of transformation).

What is the relationship between the distance between the parallel lines and the total distance mapped by each point (BB'' or CC'')?

Distance between parallel lines is half distance between points

The two examples above the only thing that changed was the order that we did the reflection in. What impact did the order have on the result?