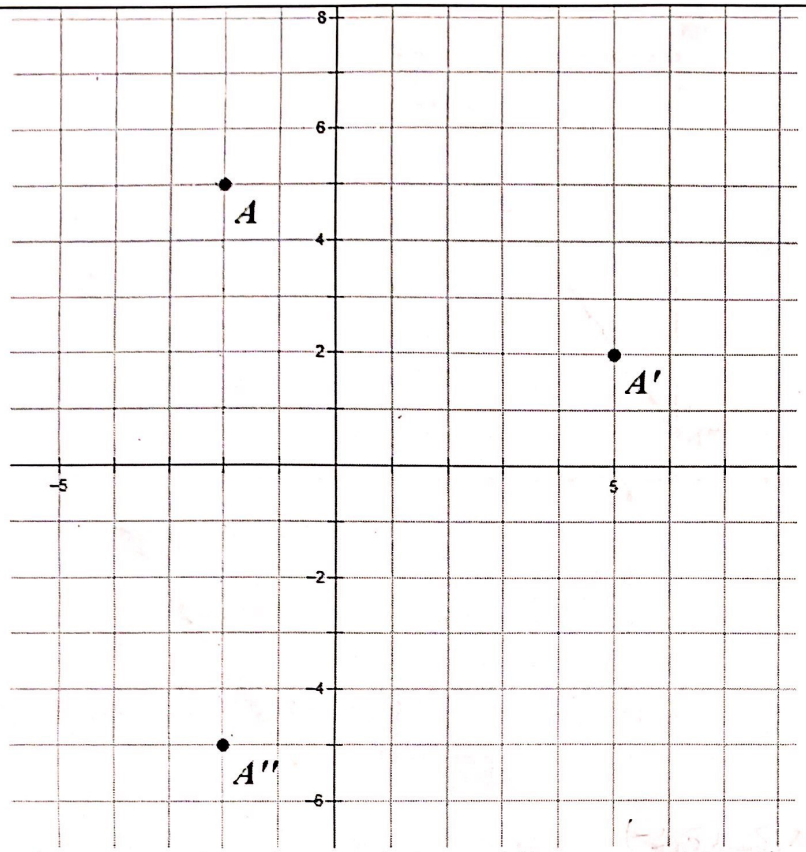
Students may also have used a translation here.

①

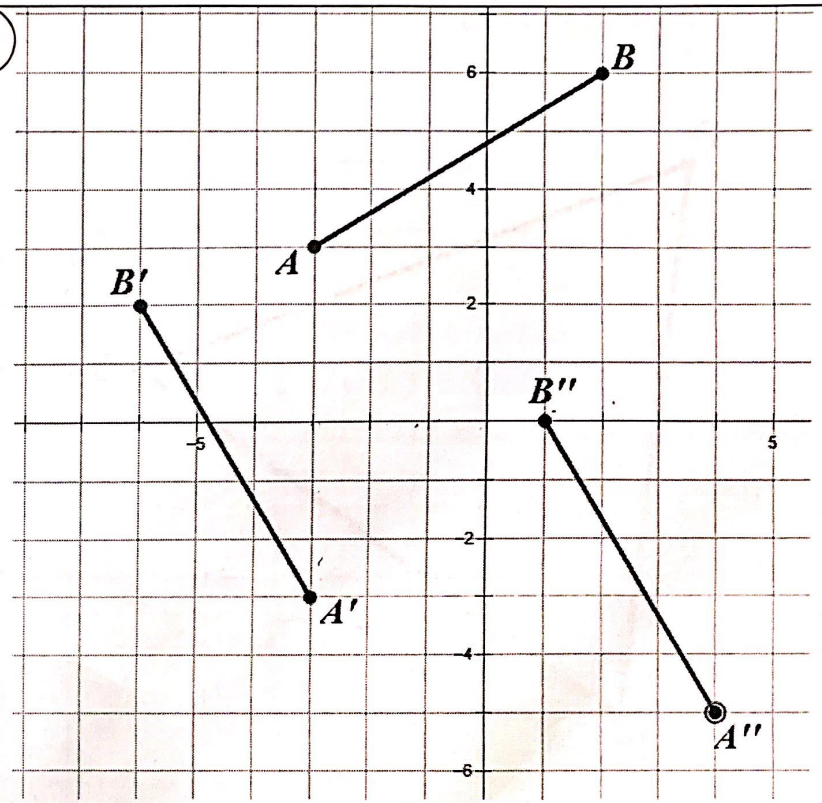


1. Identify one series of transformations that could have mapped A to A' and then A' to A''.

2. What is a single transformation that could map A'' back onto A?

Reflect over the x-axis.

②



1. Describe a transformation to map $\overline{AB}$ to $\overline{A'B'}$. Write the rule.

$f(x,y) = (-y, x)$ 90° CCW Rotation @ (0,0)

2. Describe a transformation to map $\overline{A'B'}$ to $\overline{A''B''}$. Write the rule.

$f(x,y) = (x+7, y-2)$ Translation R+7 down 2

3. Write a rule to represent the composition of transformations to map $\overline{AB}$ to $\overline{A''B''}$. $f(x,y) = (-y+7, x-2)$

① $A(-2,5) \rightarrow A'(5,2)$ $f(x,y) = (y,-x)$

* 270 CCW

$A'(5,2) \rightarrow A''(-2,-5)$ $f(x,y) = (-y,-x)$

* Reflect over $y=-x$

② $A''(-2,-5) \rightarrow A(-2,5)$

$f(x,y) = (x,-y)$

① $A(-3,3) \rightarrow A'(-3,-3)$

$B(2,6) \rightarrow B'(-6,2)$

② $A'(-3,-3) \rightarrow A''(4,-5)$

$B'(-6,2) \rightarrow B''(1,0)$

Right 7, Down 2

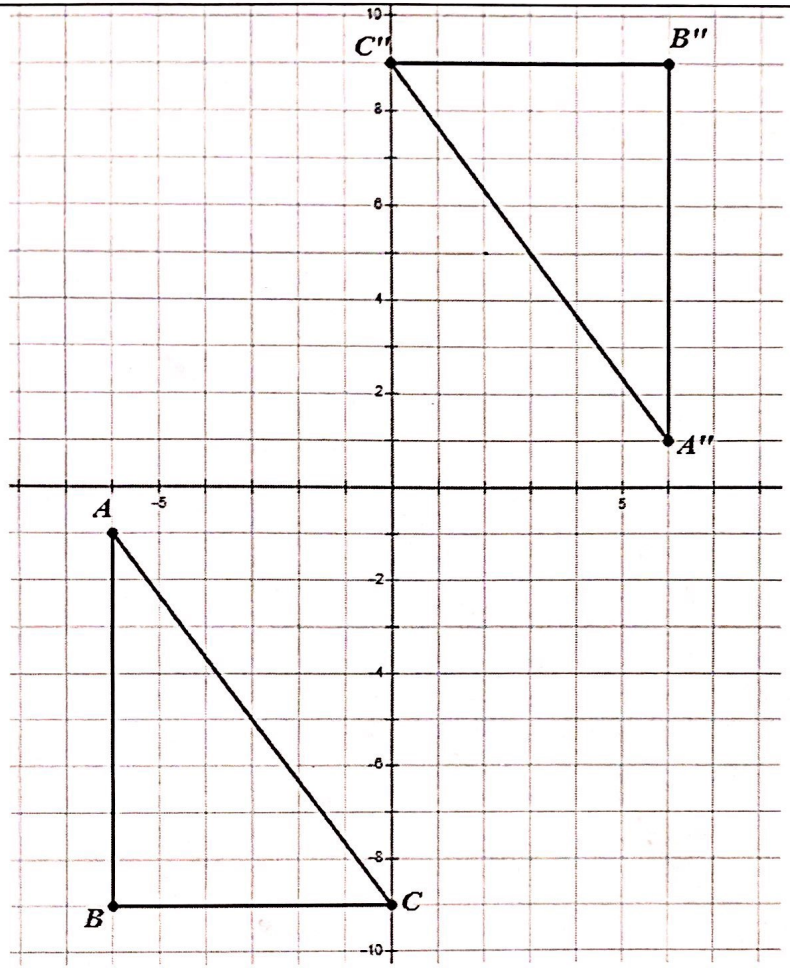
③ CHECK: $(2,6) \rightarrow (-6+7, 2-2)$

$(1,0)$ ✓

90 $(-y,x)$
180 $(-x,-y)$
270 $(y,-x)$

x-axis $(x,-y)$
y axis $(-x,y)$
$y=x$ (y,x)
$y=-x$ $(-y,-x)$

3



1. A composition of transformations occurred. Identify a series of transformations that could map ΔABC to $\Delta A''B''C''$.

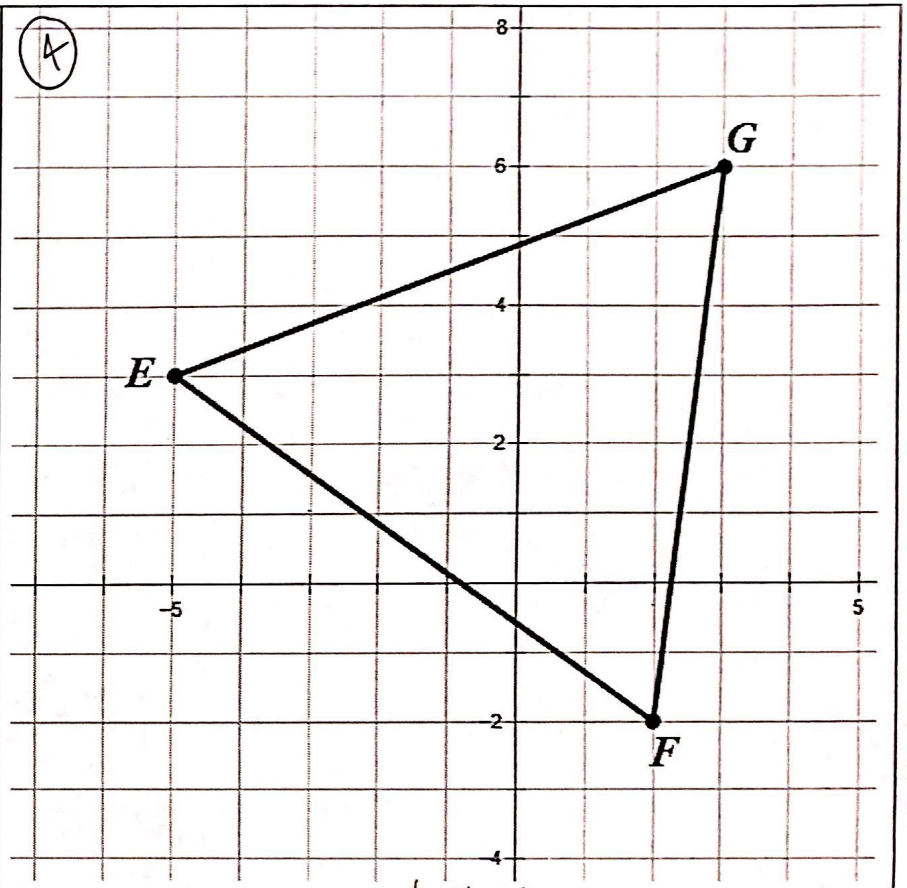
Reflect over x-axis, then Reflect over y-axis

2. Determine a single transformation that could map $\Delta A''B''C''$ onto the original triangle. Rotate 180° around (0,0)

$A(-6,-1) \rightarrow A''(6,1)$

$f(x,y) = (-x,-y)$

4



$(-y,x)$

1. Triangle EGF will be rotated 90° counterclockwise around the origin and will then be reflected across the y-axis, producing an image triangle. Which additional transformations will map the image triangle back onto the original triangle?

(x,y)

Reflect over $y=x$

$G(3,6) \rightarrow G'(-6,3) \rightarrow G''(6,3)$

Applying Composition Rules

1. $f(x,y) = (y-5, x+2)$ to $(-3,4)$. Describe the composition of transformations. $f(-3,4) = (4-5, -3+2) = (-1,-1)$

2. $f(x,y) = (-x, y+1)$ to $(5,-6)$. Describe the composition of transformations. $f(5,-6) = (-5, -6+1) = (-5,-5)$