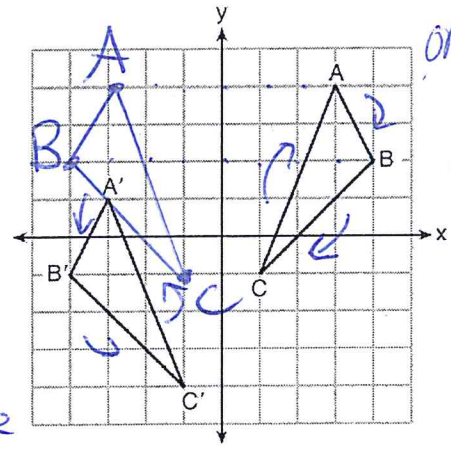


Sequences of Rigid Motions on the Grid

1. As graphed on the set of axes below, $\triangle A'B'C'$ is the image of $\triangle ABC$ after a sequence of transformations.

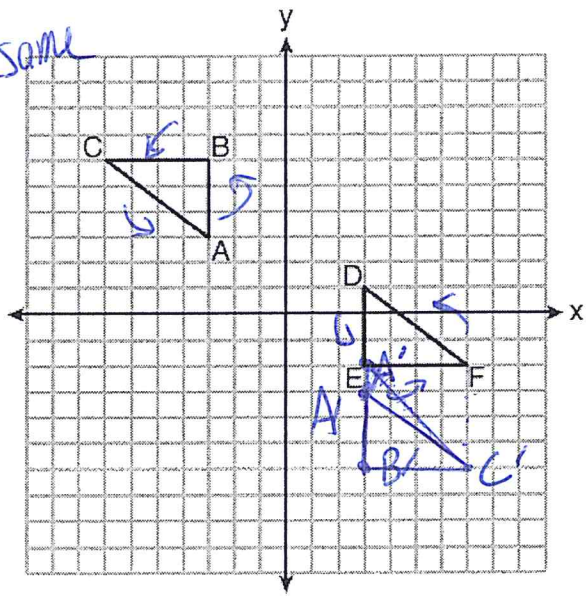
Is $\triangle A'B'C'$ congruent to $\triangle ABC$? Use the properties of rigid motion to explain your answer.

- 1) Reflect $\triangle ABC$ over the y-axis followed by a translation 3 units down.
- 2) Yes, a reflection and translation are rigid motions.
- 3) A rigid motion preserves size and angle measure producing a congruent figure.



2. On the set of axes below, $\triangle ABC \cong \triangle DEF$. Describe a sequence of rigid motions that maps $\triangle ABC$ onto $\triangle DEF$. Are the triangles congruent? Explain your answer.

orientation same
rotation

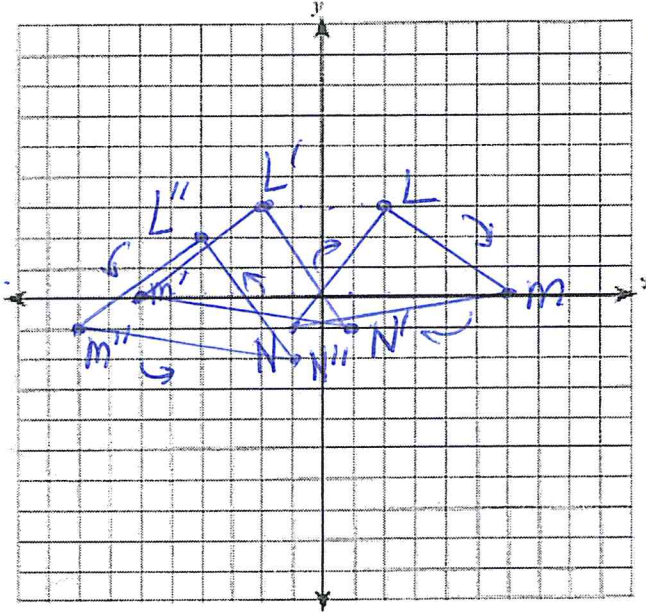


- 1) Rotate $\triangle ABC$ counter-clockwise 180° centered at the origin followed by a translation four units up.
- 2) Yes, a rotation and translation are rigid motions.
- 3) A rigid motion preserves size and angle measure producing a congruent figure.

- $A' (3, -3)$
- $B' (3, -6)$
- $C' (7, -6)$

3. A set of transformations mapped $\triangle LMN$ from the coordinates of $L(2, 3)$, $M(6, 0)$, and $N(-1, -1)$ to the new coordinates of $L''(-4, 2)$, $M''(-8, -1)$, and $N''(-1, -2)$. Give an ordered list of transformations that would produce $\triangle L''M''N''$ from $\triangle LMN$.
[The use of the grid is optional.]

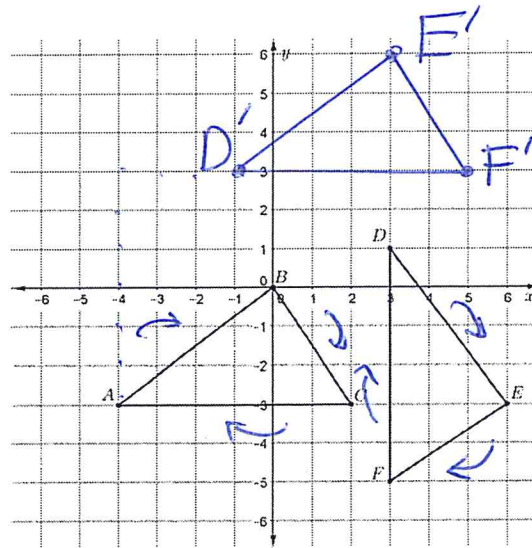
- 1) Reflect $\triangle LMN$ over the y-axis followed by a translation 2 units to the left and 1 unit down.
2)



Opposite orientation reflection

4. The graph below shows $\triangle ABC$ with $A(-4, -3)$, $B(0, 0)$, and $C(2, -3)$ and $\triangle DEF$ with $D(3, 1)$, $E(6, -3)$, and $F(3, -5)$. Determine a sequence of rigid motions that will map $\triangle DEF$ onto $\triangle ABC$.

- 1) Rotate $\triangle DEF$ counter-clockwise 90° centered at the origin followed by a translation 3 units left and 6 units down.



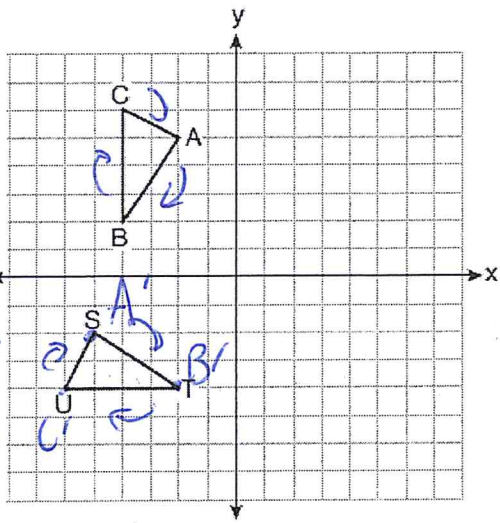
Same orientation rotation

$D'(-1, 3)$
 $E'(-3, 6)$
 $F'(-3, 3)$

5. On the set of axes below, $\triangle ABC \cong \triangle STU$. Describe a sequence of rigid motions that maps $\triangle ABC$ onto $\triangle STU$. Are the triangles congruent? Explain your answer.

Same orientation
rotation

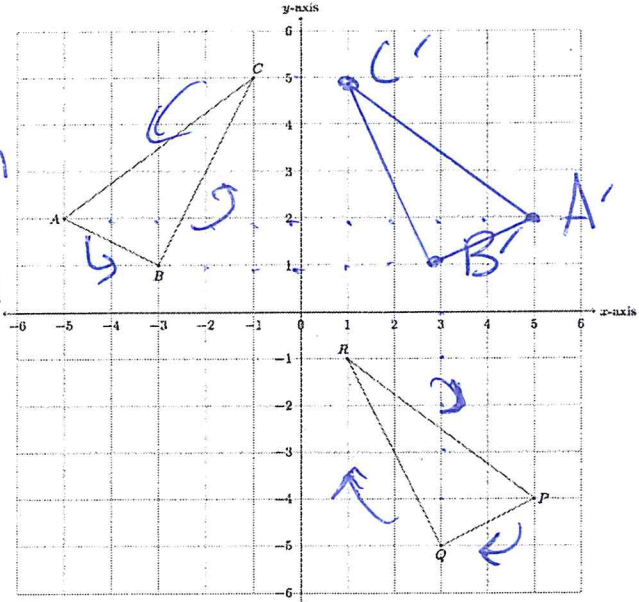
$A'(-5, -2)$
 $B'(-2, -4)$
 $C'(-6, -4)$



- 1) Rotate $\triangle ABC$ counter-clockwise 90° centered at the origin followed by a translation 1 right and 1 down.
- 2) Yes, a rotation and translation are rigid motions.
- 3) A rigid motion preserves size and angle measure producing a congruent figure

6. In the diagram below, $\triangle ABC$ and $\triangle PQR$ are graphed. Is $\triangle ABC \cong \triangle PQR$? Justify your answer.

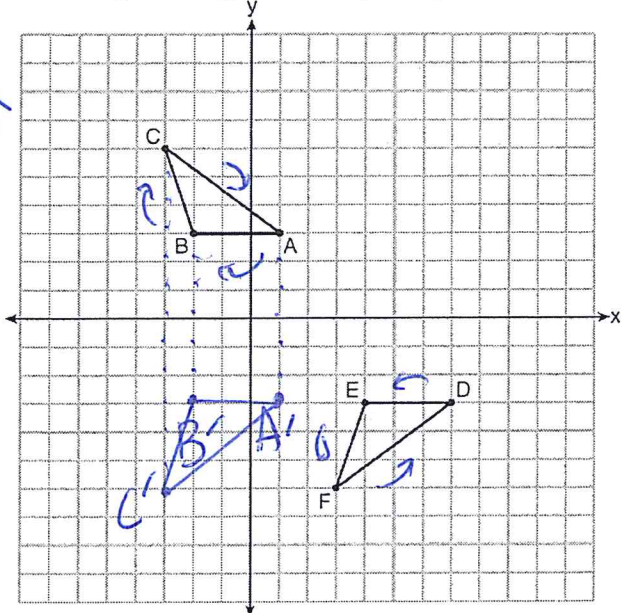
Opposite orientation
reflection



- 1) reflect $\triangle ABC$ over the y-axis followed by a translation 6 units down.
- 2) Yes, a reflection and translation are rigid motions.
- 3) A rigid motion preserves size and angle measure producing a congruent figure

Opposite orientation
Reflection

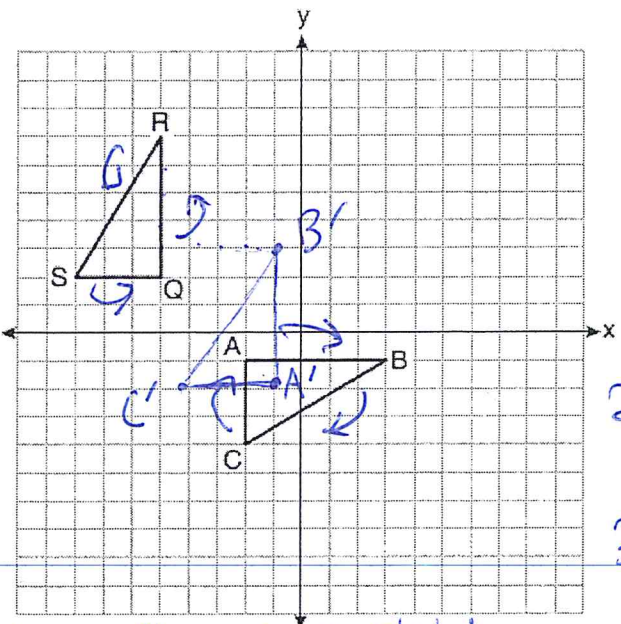
7. Describe a sequence of transformations that will map $\triangle ABC$ onto $\triangle DEF$ as shown below. Are the triangles congruent? Explain your answer.



- 1) Reflect $\triangle ABC$ over the x-axis followed by a translation 6 units to the right.
- 2) Yes, a reflection and translation are rigid motions.
- 3) A rigid motion preserves size and angle measure producing a congruent figure.

8. On the set of axes below, $\triangle ABC$ is graphed with coordinates $A(-2, -1)$, $B(3, -1)$, and $C(-2, -4)$. Triangle QRS , the image of $\triangle ABC$, is graphed with coordinates $Q(-5, 2)$, $R(-5, 7)$, and $S(-8, 2)$. Describe a sequence of transformations that would map $\triangle ABC$ onto $\triangle QRS$. Are the triangles congruent? Explain your answer.

Opposite orientation
Reflection



- $A(-2, -1) \rightarrow (-1, 2)$
 $B(3, -1) \rightarrow (-1, 3)$
 $C(-2, -4) \rightarrow (-4, 2)$
- 1) reflect $\triangle ABC$ over the line $y=x$ followed by a translation 4 units left and 9 units up.
 - 2) Yes, a reflection and translation are rigid motions.
 - 3) A rigid motion preserves size and angle measure producing a congruent figure.

*because the image is slanted,
reflect over $y=x$.