

Indicators

Objective:

3.03 Transform figures in the coordinate plane and describe the transformation.

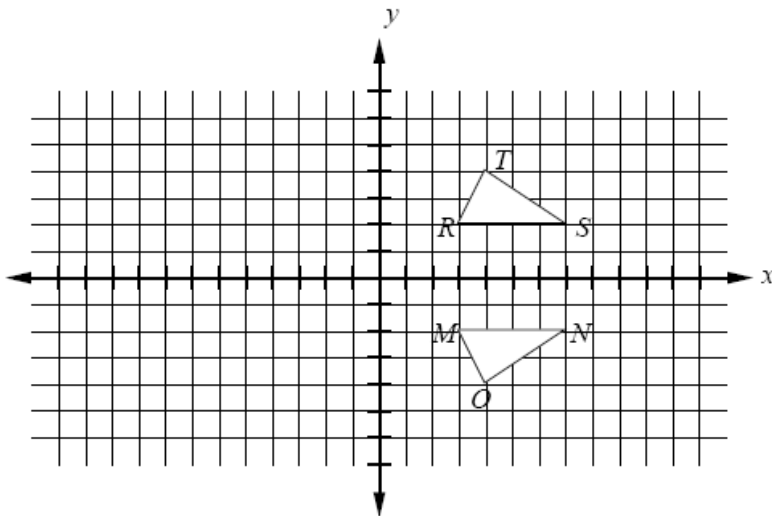
Vocabulary and Resources

reflection (flip)
translation (slide)
rotation (turn)
line of reflection
center of rotation
angle of rotation
pre-image
image
clockwise
counterclockwise

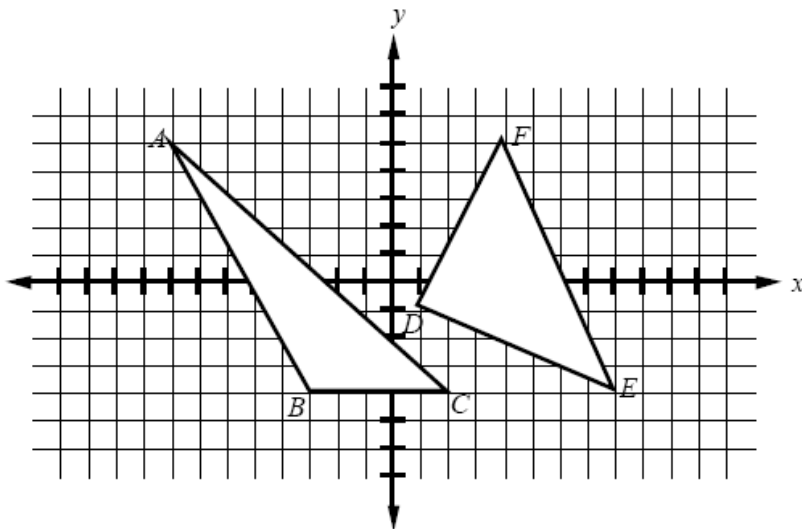
x -axis
 y -axis
quadrants
Quadrant I
1st Quadrant
Quadrant II
2nd Quadrant
Quadrant III
3rd Quadrant
Quadrant IV
4th Quadrant

notation:
 $\triangle ABC \rightarrow \triangle DEF$
 $\triangle ABC \rightarrow \triangle A'B'C'$
 $A \rightarrow A'$
 $(x, y) \rightarrow (x', y')$
 $(x', y') = (x + a, y + b)$
mirrors
patty paper

- A. $\triangle RST \rightarrow \triangle MNO$ Identify the transformation that occurred. Give the coordinates of points M , N , and O . Write in words a description of this transformation.



- B.** Triangle ABC is translated 4 units to the right and two units down. Give the coordinates of triangle $A'B'C'$. Is triangle $A'B'C'$ congruent to triangle ABC ? Using the same rule, give the coordinates of triangle $D'E'F'$.



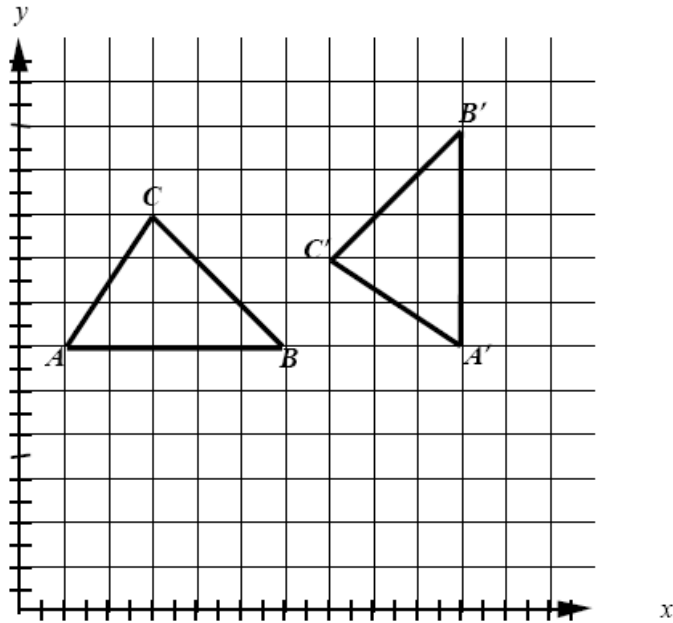
- C.** Graph a figure in the coordinate plane. Describe a reflection of this figure that will produce the same result as a translation of the figure, and graph the resulting figure.

- D.** Triangle ABC is rotated 90° clockwise about the origin. If the coordinates of B are $(-4, 4)$, what are the coordinates of B' ?
(Adapted from SREB publication *Getting Students Ready for Algebra I: What Middle Grades Students Need to Know and Be Able to Do*)

- E.** Triangle ABC : $A(4, 5)$, $B(3, 7)$, $C(5, 7)$ is reflected over the line containing $(2, 7)$ and $(6, 7)$. The image and pre-image together form which polygon?

- F.** Graph the quadrilateral: $P(5, 6)$, $Q(6, 4)$, $R(3, 2)$, $S(2, 4)$. If the polygon is transformed according to the rule $(x', y') = (x + 2, y + 1)$, where will the diagonals of the new polygon $P'Q'R'S'$ meet? Is figure $PQRS$ congruent to figure $P'Q'R'S'$?

G. What transformations were performed to move triangle ABC to triangle $A'B'C'$?



H. What is the image of triangle ABC : $A(1, 4)$, $B(3, 2)$, $C(1, 2)$ if it is translated to the left five units and down six units?

I. Trapezoid $DEFG$: $D(1, 7)$, $E(3, 9)$, $F(7, 9)$, $G(8, 7)$ is reflected over its longer base. Name polygon $DEFGF'E'$.