

Chapter 9: Transformational Geometry

SECTION 1: REFLECTIONS

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I Can

- Identify and draw reflections

Isometry

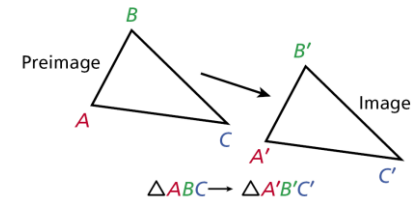
An **isometry** is a transformation that does not change the shape or size of a figure. Also called *congruence transformations* or *rigid motions*.

THREE TYPES:

- Reflections (flipping across a line)
- Translations (sliding along a vector)
- Rotations (turning around a point)

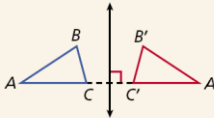
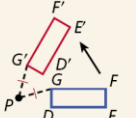
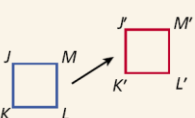
Review

The original figure is called the **preimage**. The resulting figure is called the **image**.



Review

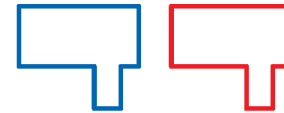
Transformations

REFLECTION	ROTATION	TRANSLATION
 <p>A reflection (or <i>flip</i>) is a transformation across a line, called the line of reflection. Each point and its image are the same distance from the line of reflection.</p>	 <p>A rotation (or <i>turn</i>) is a transformation about a point P, called the center of rotation. Each point and its image are the same distance from P.</p>	 <p>A translation (or <i>slide</i>) is a transformation in which all the points of a figure move the same distance in the same direction.</p>

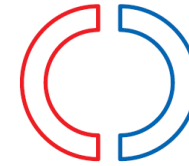
Reflection?

Tell whether each transformation appears to be a reflection. Explain.

A.



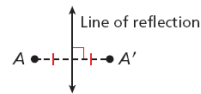
B.



Reflections

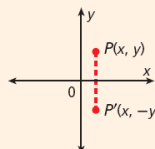
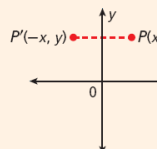
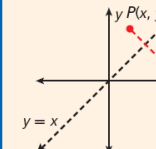
Reflections

A reflection is a transformation across a line, called the line of reflection, so that the line of reflection is the perpendicular bisector of each segment joining each point and its image.



In the Coordinate Plane

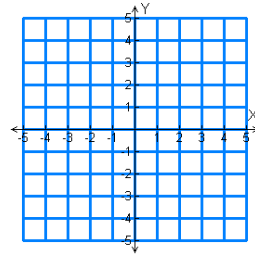
Reflections in the Coordinate Plane

ACROSS THE x -AXIS	ACROSS THE y -AXIS	ACROSS THE LINE $y = x$
 <p>$(x, y) \rightarrow (x, -y)$</p>	 <p>$(x, y) \rightarrow (-x, y)$</p>	 <p>$(x, y) \rightarrow (y, x)$</p>

Example

Reflect the figure with the given vertices
across the given line.

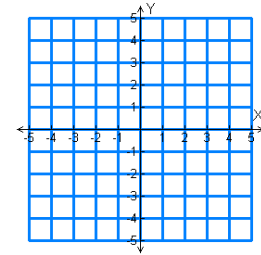
$R(-2, 2)$, $S(5, 0)$, $T(3, -1)$;
 $y = x$



Example

Reflect the figure with the given vertices
across the given line.

$X(2, -1)$, $Y(-4, -3)$, $Z(3, 2)$;
 x -axis



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