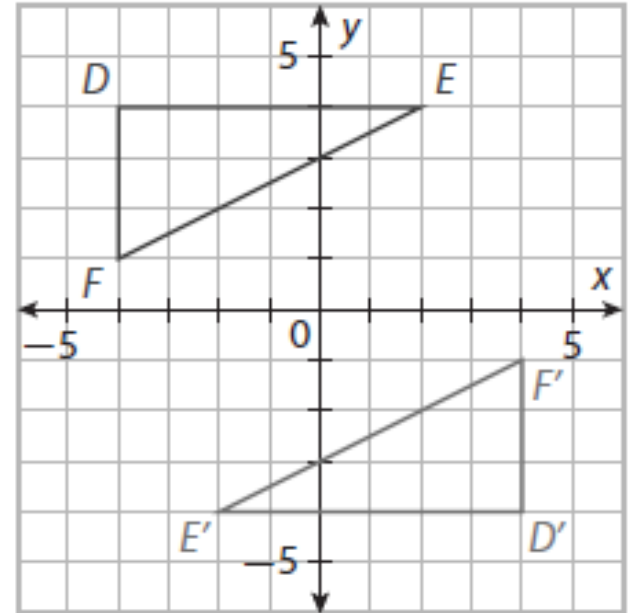You will need graph paper for today's lesson.

Transformations

A <u>transformation</u> changes the location, shape, and/or size of a figure.

- The <u>preimage</u> is the figure before the change

- The <u>image</u> is the figure after it's been changed

- The image points are labeled with "primes"

  ➢ Point D is mapped to Point D'

  ➢ $\triangle DEF$ is mapped to $\triangle D'E'F'$

We use <u>coordinate notation</u> to describe how the coordinates of the preimage are changed to get the coordinates of the image.
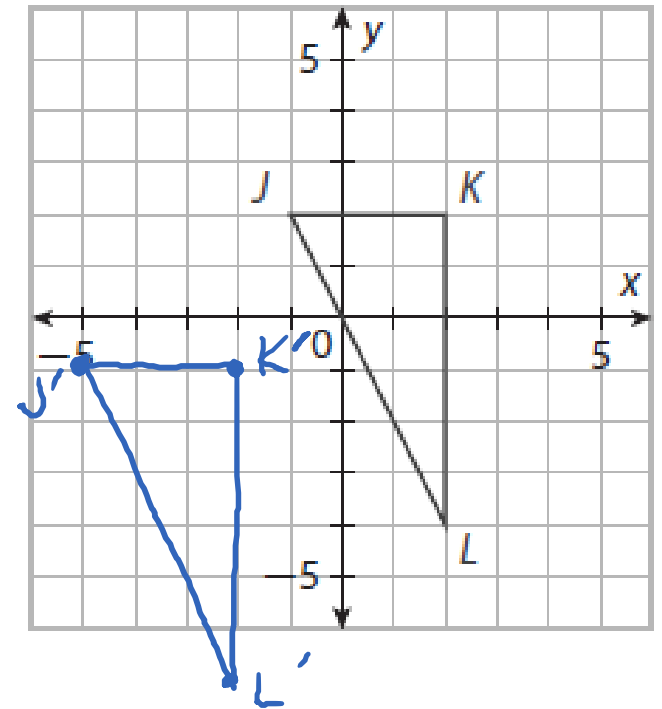
<u>Ex.</u> Graph the image of ΔJKL under the transformation $(x, y) \rightarrow (x - 4, y - 3)$.

$(x, y) \longrightarrow (x - 4, y - 3)$

$J(-1, 2) \quad J'(-5, -1)$
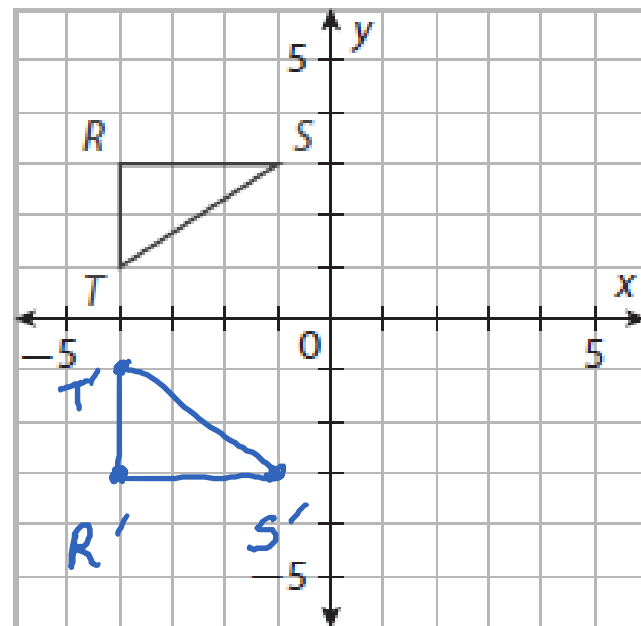
$K(2, 2) \quad K'(-2, -1)$

$L(2, -4) \quad L'(-2, -7)$

Ex. Graph the image of $\triangle RST$ under the transformation $(x, y) \rightarrow (x, -y)$.

$(x, y) \rightarrow (x, -y)$
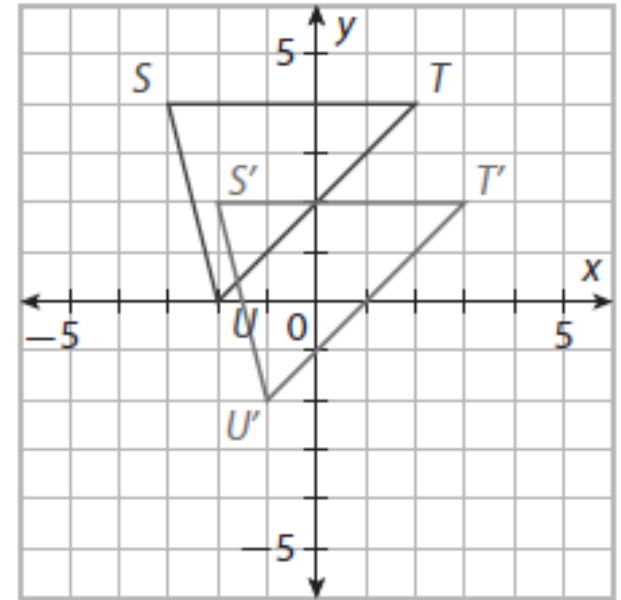
$R(-4, 3)$ $R'(-4, -3)$

$S(-1, 3)$ $S'(-1, -3)$

$T(-4, 1)$ $T'(-4, -1)$

Ex. Find the coordinates of the preimage and image points, and then write the coordinate rule for the transformation.

$$(x, y) \longrightarrow (x+1, y-2)$$
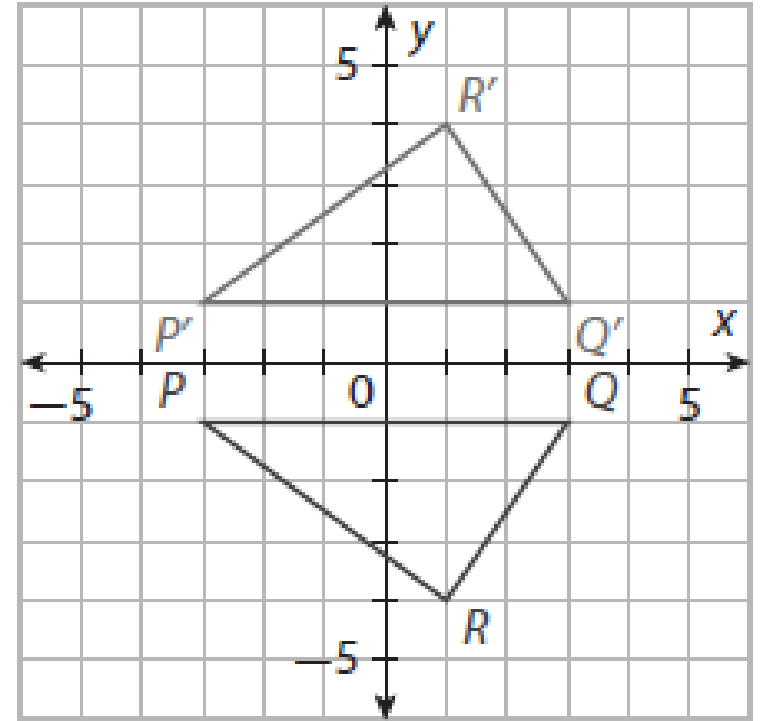
$S(-3, 4)$ $S'(-2, 2)$

$T(2, 4)$ $T'(3, 2)$

$U(-2, 0)$ $U'(-1, -2)$

Ex. Find the coordinates of the preimage and image points, and then write the coordinate rule for the transformation.

$$(x, y) \longrightarrow (x, -y)$$

$P(-3, -1) \qquad P'(-3, 1)$

$Q(3, -1) \qquad Q'(3, 1)$

$R(1, -4) \qquad R'(1, 4)$

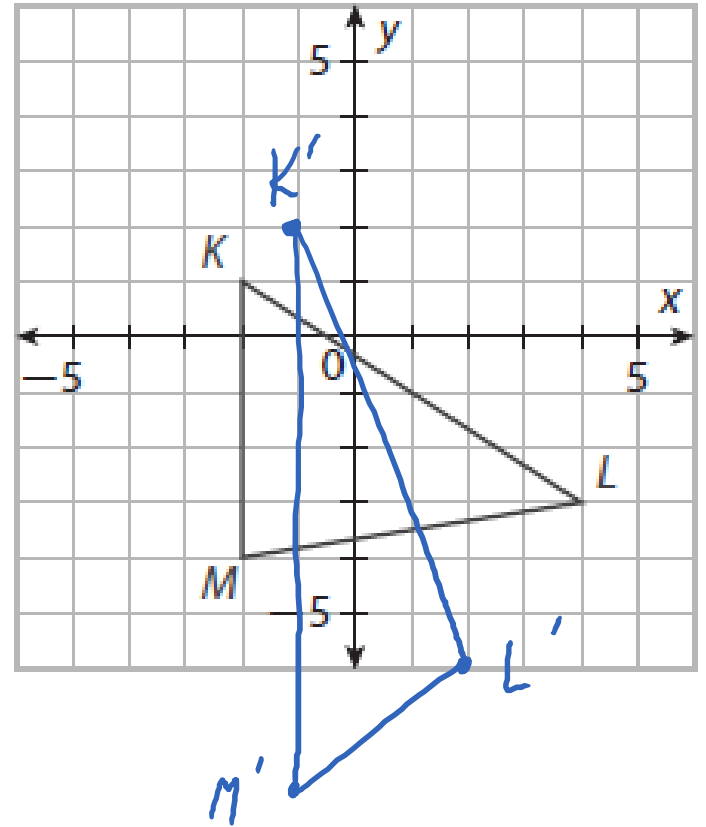These are called <u>rigid transformations</u> because the shape doesn't change (it just moves).

Ex. Graph the image of ΔKLM under the transformation $(x, y) \rightarrow (\frac{1}{2}x, 2y)$.

$$(x, y) \rightarrow (\tfrac{1}{2}x, 2y)$$

$K(-2, 1)$ $K'(-1, 2)$

$L(4, -3)$ $L'(2, -6)$

$M(-2, -4)$ $M'(-1, -8)$

This is called a nonrigid transformation because the shape changes.