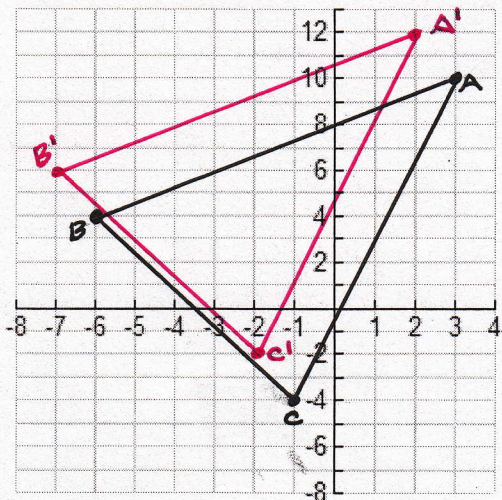**Apply the transformation *M* to the polygon with the given vertices. Name the coordinates of the image points. Identify and describe the transformation.**
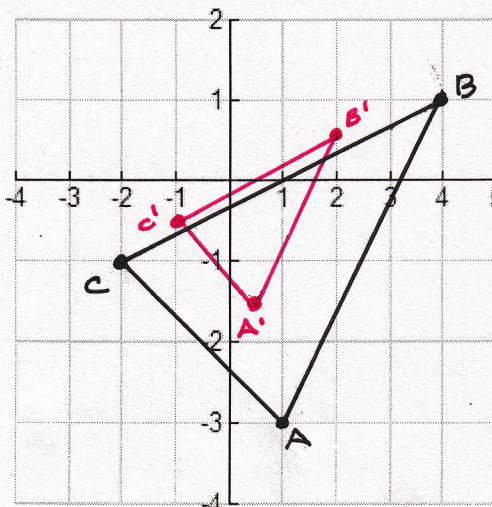
1. $M(x, y) \rightarrow (x - 1, y + 2)$

  $A(3, 10)$, $B(-6, 4)$, $C(-1, -4)$

Translation
left 1, up 2

$A'(2, 12)$ $B'(-7, 6)$ $C'(-2, -2)$

2. $M(x, y) \rightarrow (\frac{1}{2}x, \frac{1}{2}y)$

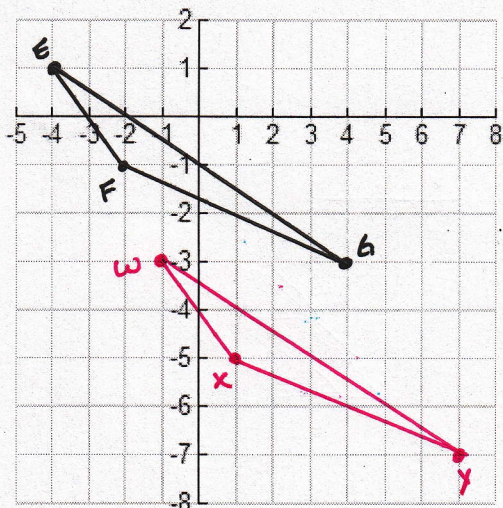 $A(1, -3)$, $B(4, 1)$, $C(-2, -1)$

Dilation with
scale factor of ½

$A'(½, -3/2)$ $B'(2, ½)$ $C'(-1, ½)$

Determine whether the polygons with the given vertices are _congruent_. Support your answer by describing a transformation.
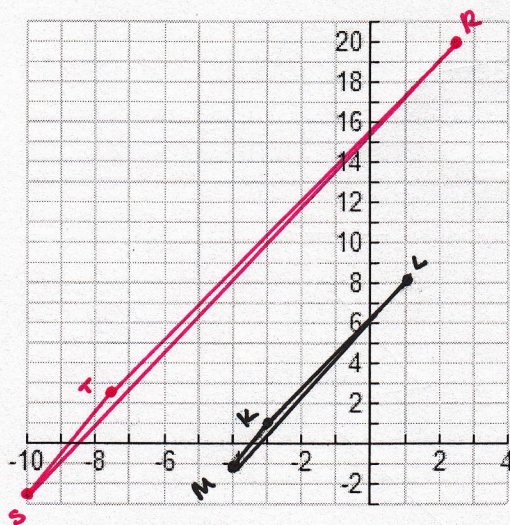
3. $E(-4, 1)$, $F(-2, -1)$, $G(4, -3)$

  $W(-1, -3)$, $X(1, -5)$, $Y(7, -7)$

CONGRUENT!

Translation

$(x, y) \rightarrow (x + 3, y - 4)$

4. $K(-3, 1)$, $L(1, 8)$, $M(-4, -1)$

  $T(-7.5, 2.5)$, $R(2.5, 20)$, $S(-10, -2.5)$

$K = \frac{new}{old}$

$= \frac{20}{8} = \frac{5}{2}$

or

2.5

Not Congruent ∴

Dilation with
Scale factor of 2.5

Prove that the polygons with the given vertices are congruent.

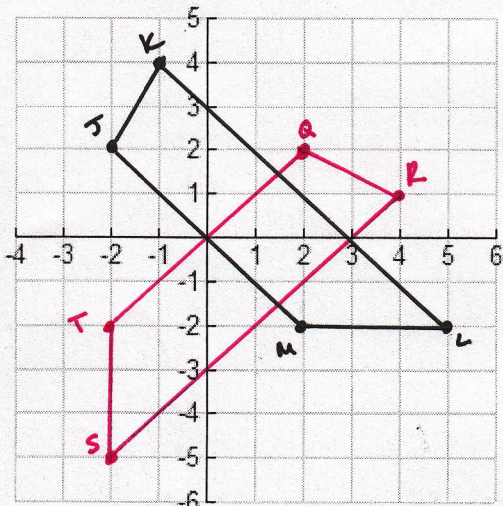5. $A(1, 2)$, $B(4, 1)$, $C(3, -1)$ and $D(4, -2)$, $E(7, -3)$, $7(6, -5)$

CONGRUENT because
Translation
$(x, y) \rightarrow (x+3, y-4)$

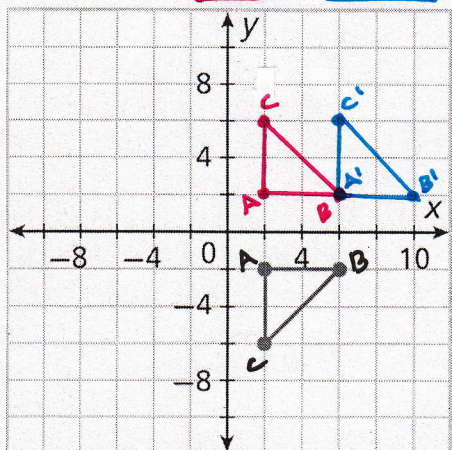6. $J(-2, 2)$, $K(-1, 4)$, $L(5, -2)$, $M(2, -2)$ and $Q(2, 2)$, $R(4, 1)$, $S(-2, -5)$, $T(-2, -2)$

CONGRUENT because
Rotation 90° clockwise
$(x, y) \rightarrow (y, -x)$

Apply the transformation M to the polygon with the given vertices. Name the coordinates of the image points. Identify and describe the transformation.
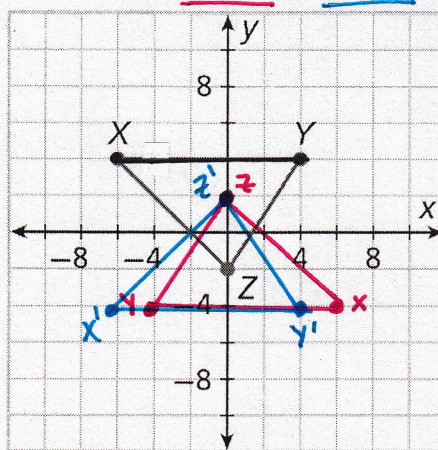
7. $M(x, y) \rightarrow (x, -y) \rightarrow (x + 4, y)$

$A'(6, 2)$
$B'(10, 2)$
$C'(6, 6)$

Reflection over x-axis
Translation right + 4.

8. $M(x, y) \rightarrow (-x, -y) \rightarrow (-x, y)$

$x'(-6, -4)$
$y'(4, -4)$
$z'(0, 2)$

Rotation 180°
Reflection over y-axis