# Have your homework out ready to check. Grab a packet from the front table and Warm Up!

Classwork - Writing Transformation Rules

WARM UP: Choose the correct image which shows the transformation of each image.

A) Reflection of ⬠ ?

  a)   b)   c)

B) Translation of ⬠ ?

  a)   b)   c)

C) Rotation of ⬠ ?

  a)   b)   c)
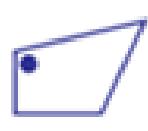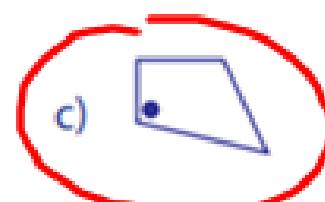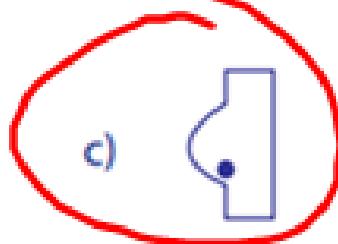
D) Rotation of ⬠ ?
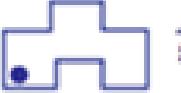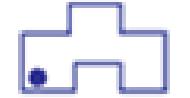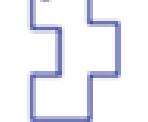
  a)   b)   c)
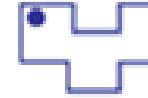
Find the coordinates of the vertices of each figure after a dilation with the given scale factor k. Then graph the original image and the dilation.
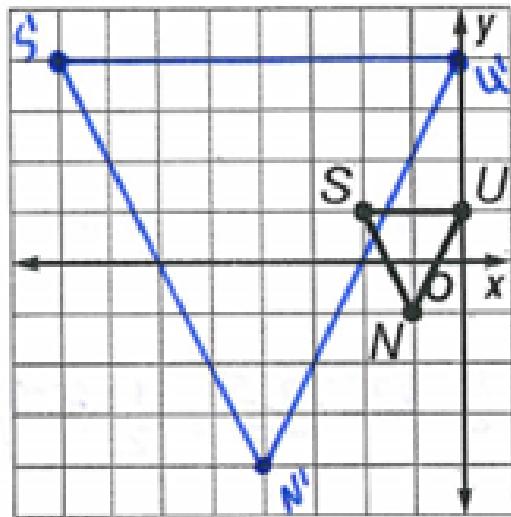
1. $S(-2, 1)$, $U(0, 1)$, $N(-1, -1)$; $k = 4$

2. $P(-3, 3)$, $Q(6, 3)$, $R(6, -3)$, $S(-3, -3)$; $k = \frac{1}{3}$

$S' \rightarrow (\underline{-8}, \underline{4})$ $U' \rightarrow (\underline{0}, \underline{4})$

$N' \rightarrow (\underline{-4}, \underline{-4})$

$P' \rightarrow (\underline{-1}, \underline{1})$ $Q' \rightarrow (\underline{2}, \underline{1})$
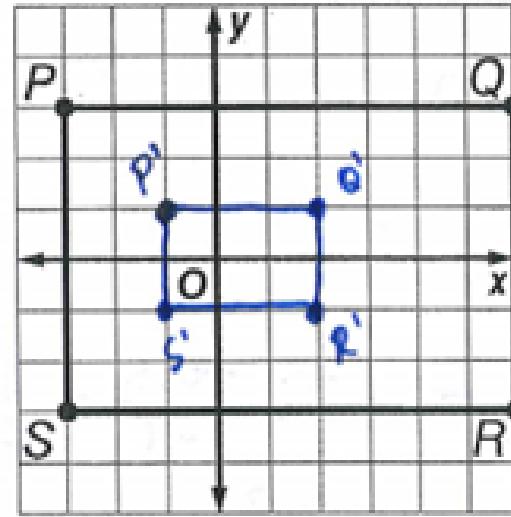
$R' \rightarrow (\underline{2}, \underline{-1})$ $S' \rightarrow (\underline{-1}, \underline{-1})$

3. $F(-2, 1)$, $U(-1, 2)$, $N(3, 1)$; $k = 2$
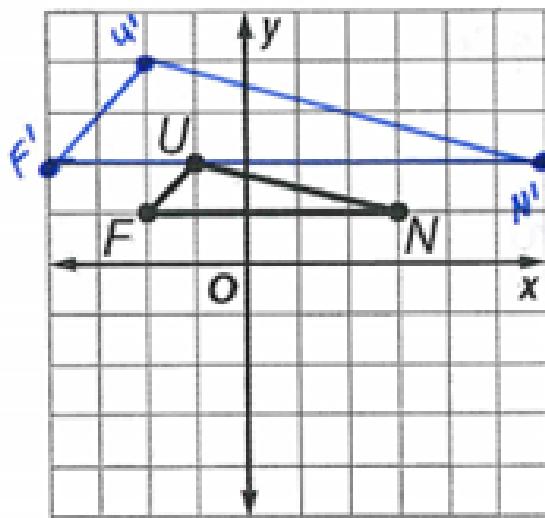
F'→(-4, 2)   U'→(-2, 4)

N'→(6, 2)

4. $P(-4, 2)$, $L(2, 4)$, $A(2, -4)$, $Y(-4, -2)$; $k = \frac{1}{2}$
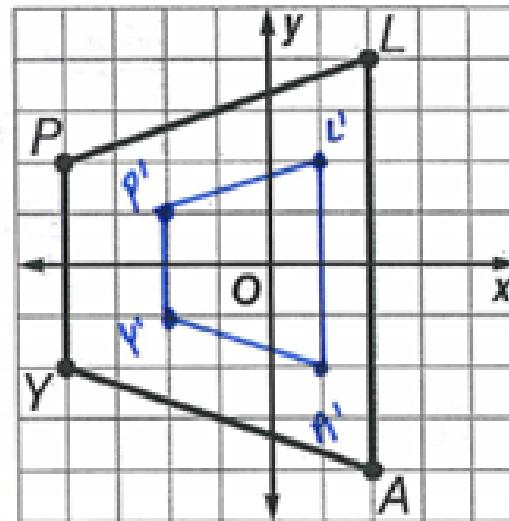
P'→(-2, 1)   L'→(1, 2)

A'→(1, -2)   Y'→(-2, -1)

5. **MAPS** Rachel and her cousin, Lena, live in different cities that are about 100 miles apart. On a map, the two cities measure 5 inches apart. What is the scale factor used for the map?

$$\frac{100mi}{5in} = 20$$

Scale Factor = __20__

6. **GEOMETRY** A square has vertices $J(-1, 4)$, $U(5, 4)$, $M(5, -2)$, $P(-1, -2)$. After a dilation, square $JUMP$ has vertices $J(-0.5, 2)$, $U(2.5, 2)$, $M(2.5, -1)$, $P(-0.5, -1)$. What is the scale factor of the dilation?

$x \rightarrow$ $J: \frac{-0.5}{-1} = \frac{1}{2}$ $U: \frac{2.5}{5} = \frac{1}{2}$ $M: \frac{2.5}{5} = \frac{1}{2}$ $P: \frac{-0.5}{-1} = \frac{1}{2}$

$y \rightarrow$ $J: \frac{2}{4} = \frac{1}{2}$ $U: \frac{2}{4} = \frac{1}{2}$ $M: \frac{-1}{-2} = \frac{1}{2}$ $P: \frac{-1}{-2} = \frac{1}{2}$

Scale Factor = __½__

7. **LANDSCAPING** A landscape designer has a drawing of a flower bed that measures 6 inches by 9 inches. The owner wants the actual flower bed to be 5 feet by 7.5 feet. What is the scale factor the designer must use to install the new flower bed?

$$5ft = 60in$$
$$7.5ft = 90in$$

$$\frac{60}{6} = 10 \qquad \frac{90}{9} = 10$$

Scale Factor = __10__

1) Identify what transformation is occurring and then fully describe it.

A)
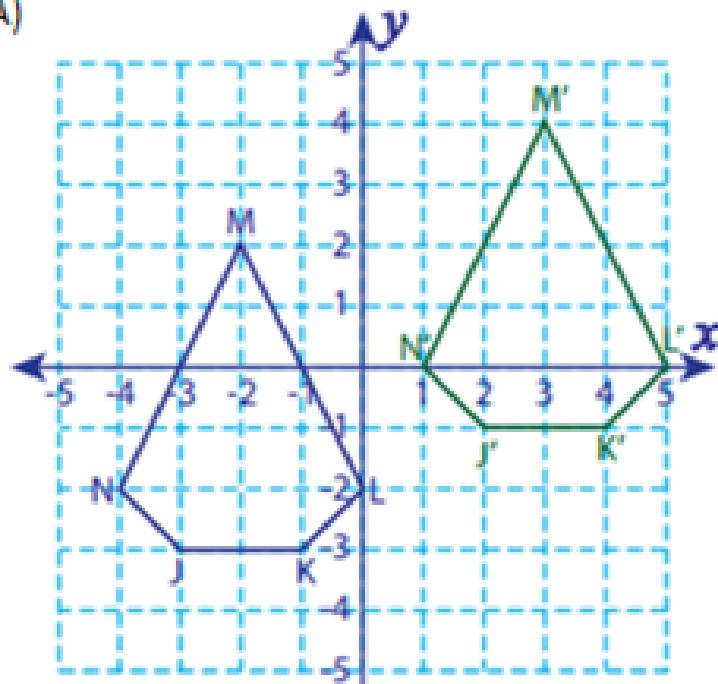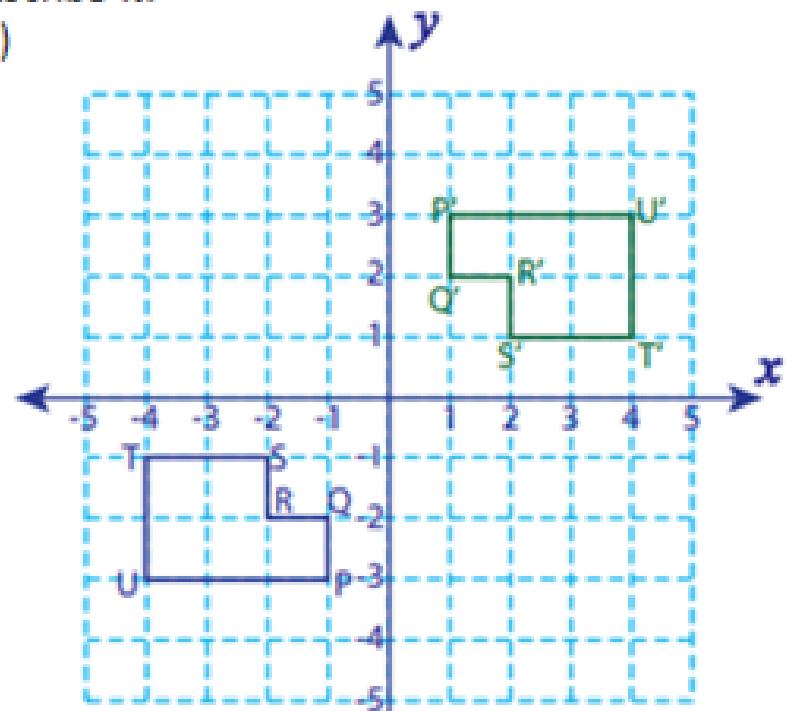
Transformation: __Translation__

Rule → $(x,y) \rightarrow (x+5, y+2)$

B)

Transformation: __Rotation__

Rule → $180°$ clockwise rotation

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

C)
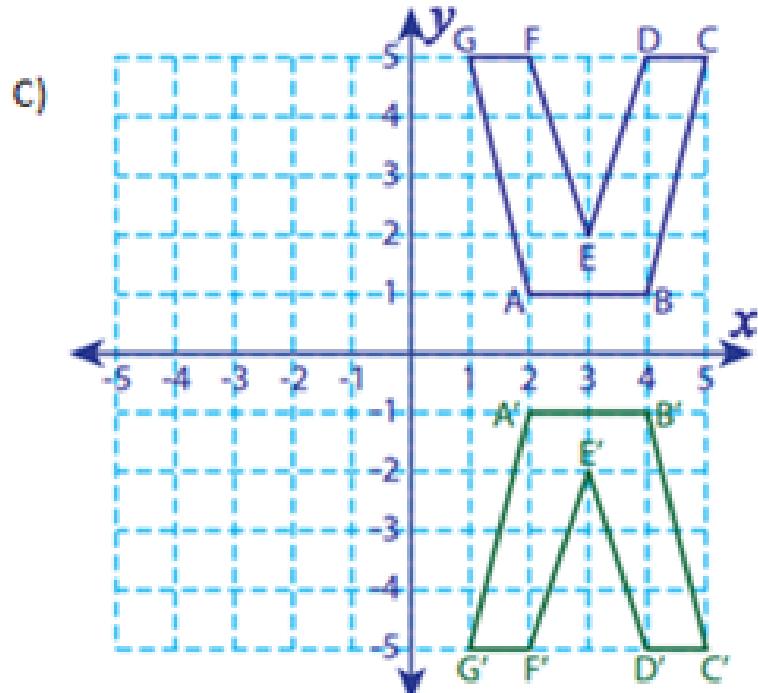
Transformation: **Reflection**

Rule → **Reflected over the x-axis**

D)
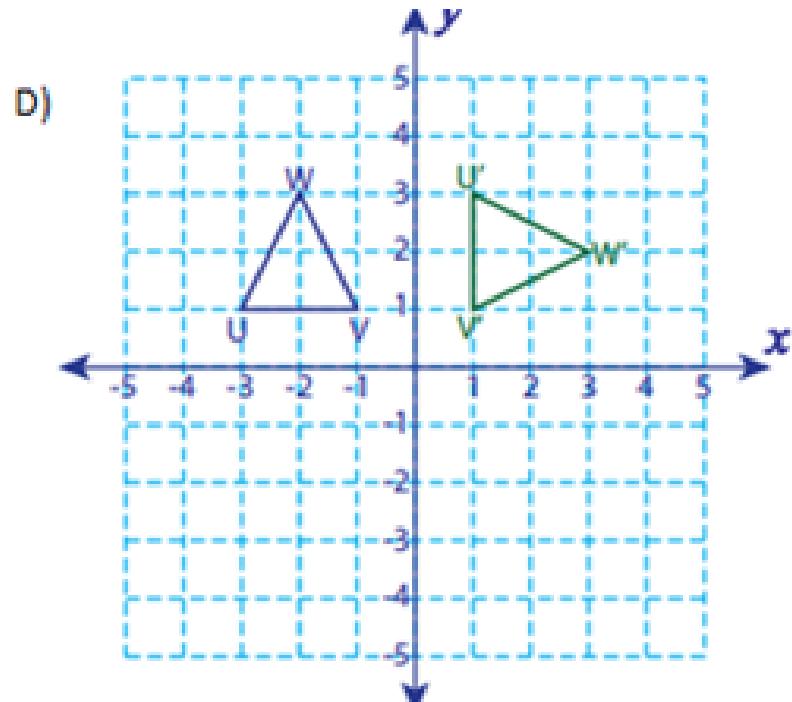
Transformation: **Rotation**

Rule → **90° clockwise Rotation OR 270° counter clockwise**

E)
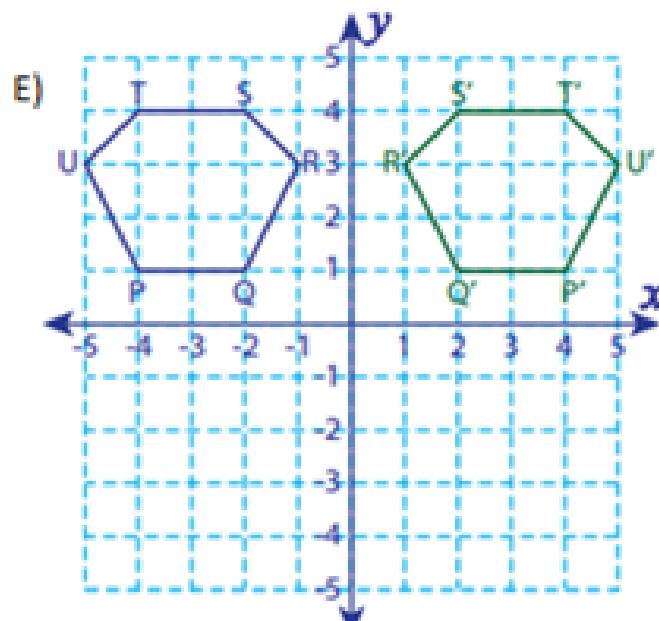
Transformation: __Reflection__

Rule → Reflected over the y-axis.

F)
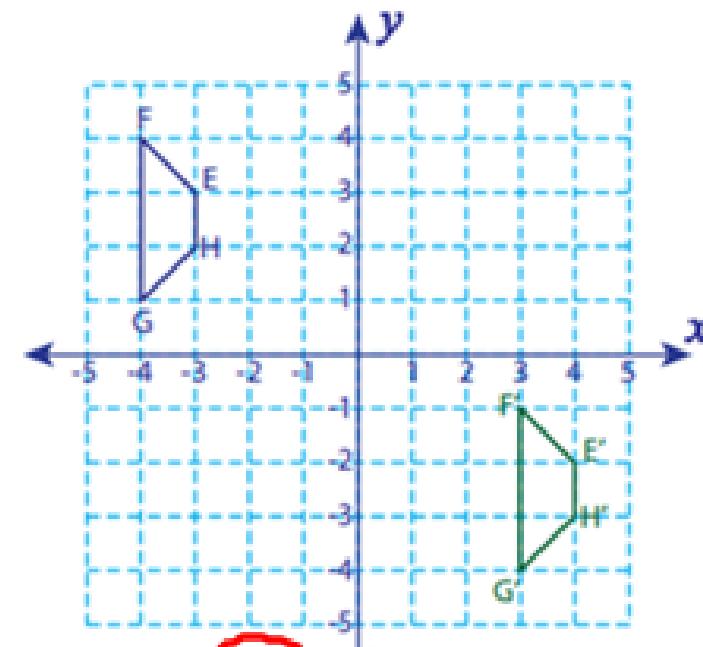
Transformation: __Translation__

Rule → $(x, y) \rightarrow (x+7, y-5)$

2) Identify what two transformations are occurring and then fully describe them.

A)

1st Transformation: __Rotation__

Rule → 180° clockwise rotation

2nd Transformation: __Translation__

Rule → $(x,y) \rightarrow (x+6, y+1)$
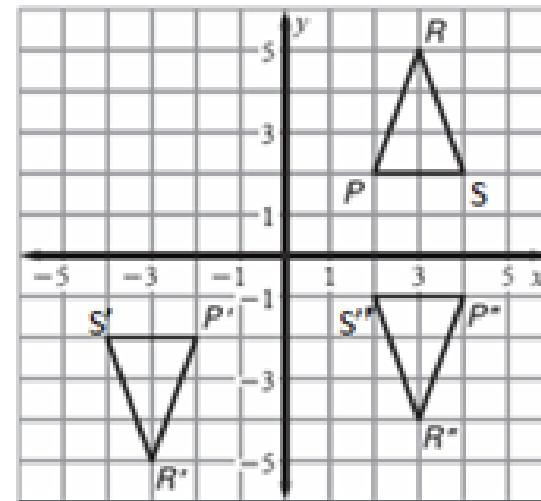
B)
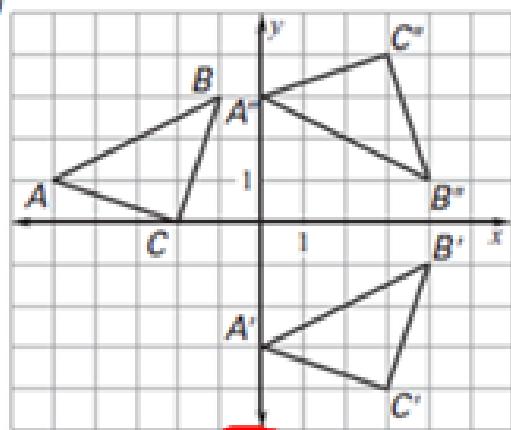
1st Transformation: __Translation__

Rule → $(x,y) \rightarrow (x+5, y-4)$

2nd Transformation: __Reflection__

Rule → Reflected over x-axis

C)

(-4,0)   (-2,0)

Dilation with a scale factor of $\frac{1}{2}$
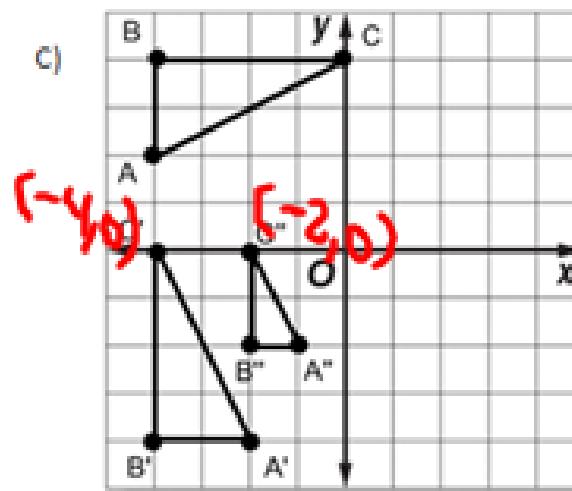
1st Transformation: __Rotation__

Rule → 90° counter clockwise rotation

2nd Transformation: __Dilation__

Rule →