

Unit 6 – Transformations HW Part 1

Essential Questions:

- Are translations, reflections, rotations, and dilations sufficient to describe the movement of any figure? (CO 6-8)
- How do you identify transformations that are rigid motions? (CO 2-5)
- How do you draw the image of a figure under a reflection, rotation, translation, dilation? (CO 2-5)
- How do the SSS, SAS, and ASA congruence criteria follow from the rigid motion definition of congruence? (CO 8)
- What must be true about the segment that connects the midpoints of two sides of a triangle? (CO 10)
- How do you find the point on a directed line segment between two given points that partitions the segment in a given ratio? (GPE 6)
- How can you use your knowledge of geometric concepts to model real-world situations?

| Day | Date | Lesson | Assignment |
|-----|--------------|--|-------------------------|
| 1 | Thur, Nov 3 | Intro to Transformations and Translations | HW 6-1 |
| 2 | Fri, Nov 4 | Reflections across x-axis, y-axis, and $y=x$ | HW 6-2 |
| 3 | Mon, Nov 7 | QUIZ 1, Days 1-2 Reflections over lines and Dilations | HW 6-3 |
| 4 | Tues, Nov 8 | Rotations | HW 6-4 |
| 5 | Wed, Nov 9 | Composition of Transformations | HW 6-5 |
| 6 | Thur, Nov 10 | Quiz / Barnyard Project | Finish Barnyard Project |
| 7 | Mon, Nov 14 | Review | Review Worksheet |
| 8 | Tues, Nov 15 | Unit 6 Test | Unit 7 Placemat |

HW 6-13

Translations of Shapes

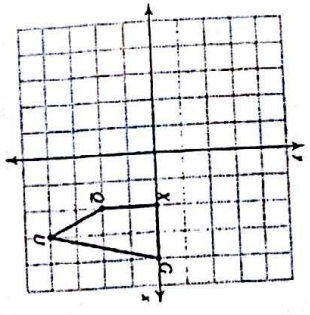
Graph the image of the figure using the transformation given.

Name _____

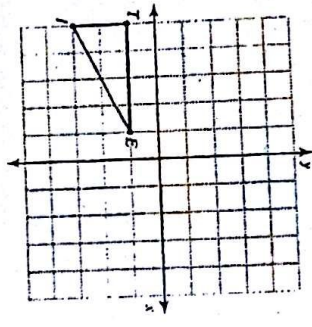
Date _____

Period _____

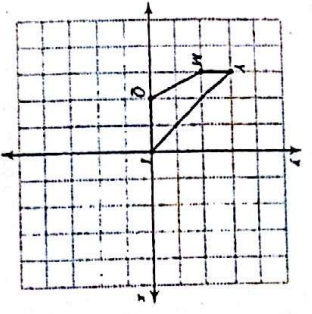
1) translation: 1 unit left



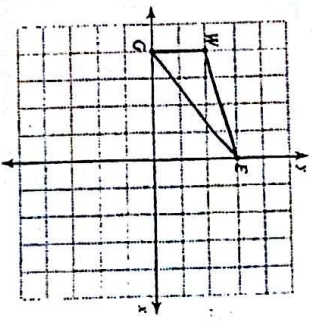
2) translation: 1 unit right and 2 units down



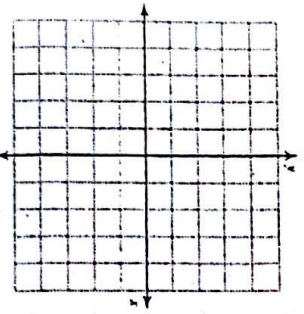
3) translation: 3 units right



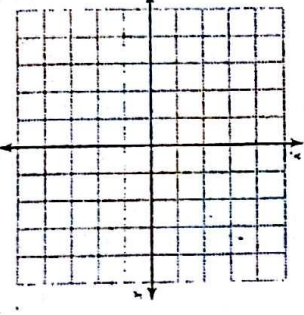
4) translation: 1 unit right and 2 units down



5) translation: 5 units up
 $U(-3, -4), M(-1, -1), L(-2, -5)$



6) translation: 3 units up
 $R(-4, -3), D(-4, 0), L(0, 0), F(0, -3)$



Find the coordinates of the vertices of each figure after the given transformation.

7) translation: 2 units left and 1 unit down
 $Q(0, -1), D(-2, 2), V(2, 4), J(3, 0)$

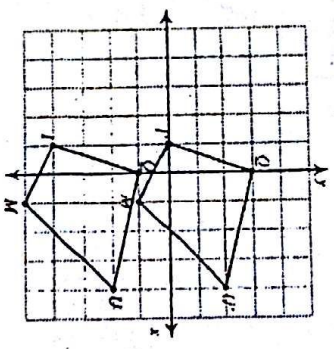
8) translation: 2 units down
 $D(-4, 1), A(-2, 5), S(-1, 4), N(-1, 2)$

9) translation: 4 units left and 4 units up
 $J(-1, -2), A(-1, 0), M(3, -3)$

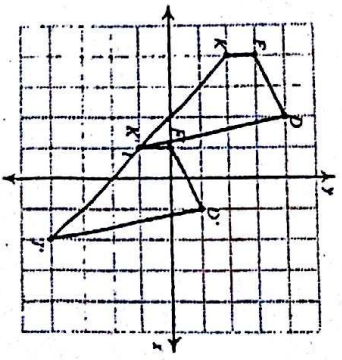
10) translation: 3 units right and 4 units up
 $Z(-4, -3), I(-2, -2), V(-2, -4)$

Write a rule to describe each transformation.

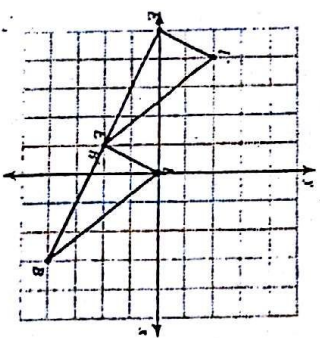
11)



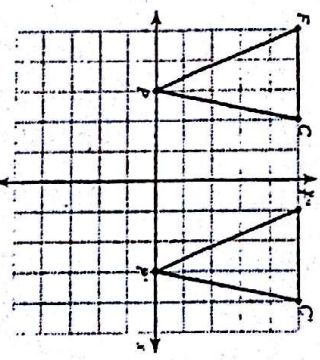
12)



13)



14)



HW 6-2

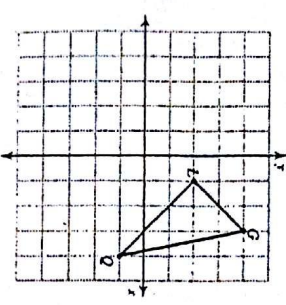
Find the coordinates of the vertices of each figure after the given transformation.

7) reflection across the x-axis
 $K(1, -1), M(4, 0), Q(4, -4)$

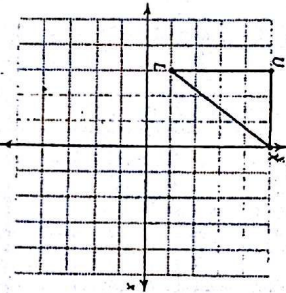
8) reflection across $y = -1$
 $R(-3, -5), N(-4, 0), V(-2, -1), E(0, -4)$

Reflections of Shapes
 Graph the image of the figure using the transformation given.

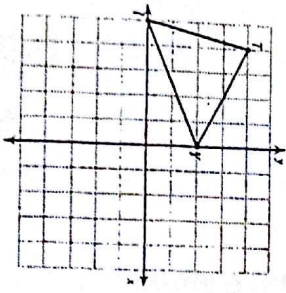
1) reflection across the x-axis



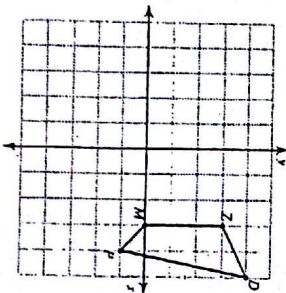
2) reflection across $y = 3$



3) reflection across $y = 1$



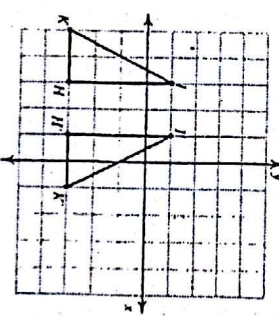
4) reflection across the x-axis



Write a rule to describe each transformation.

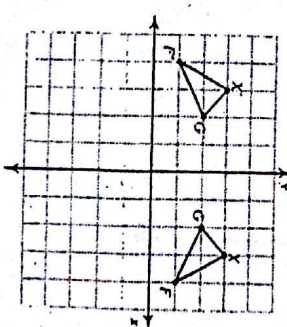
9) reflection across $x = 3$
 $F(2, 2), W(2, 5), K(3, 2)$

11)

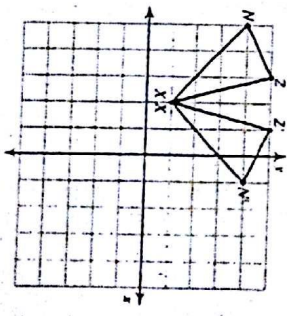


10) reflection across $x = -1$
 $V(-3, -1), Z(-3, 2), G(-1, 3), M(1, 1)$

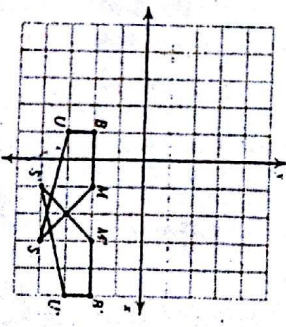
12)



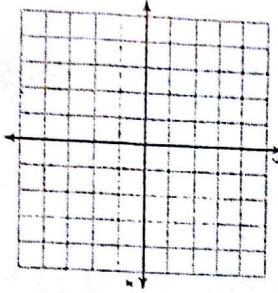
13)



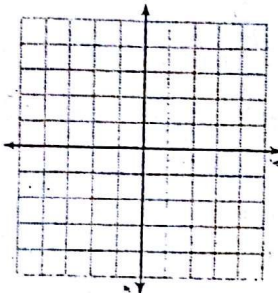
14)



5) reflection across the x-axis
 $T(2, 2), C(2, 5), Z(5, 4), F(5, 0)$



6) reflection across $y = -2$
 $H(-1, -5), M(-1, -4), B(1, -2), C(3, -3)$

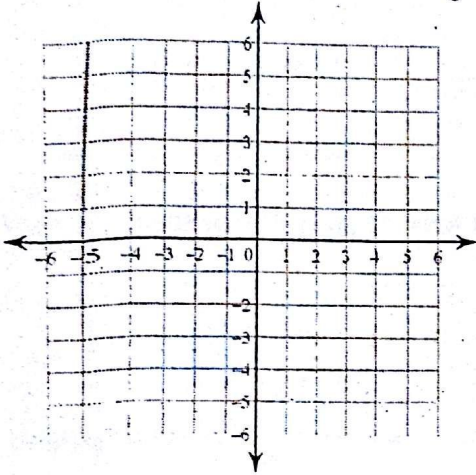


HW 6-3

Name: _____

Graph and label each figure and its image under the given reflection. Write the rule using formal notation.

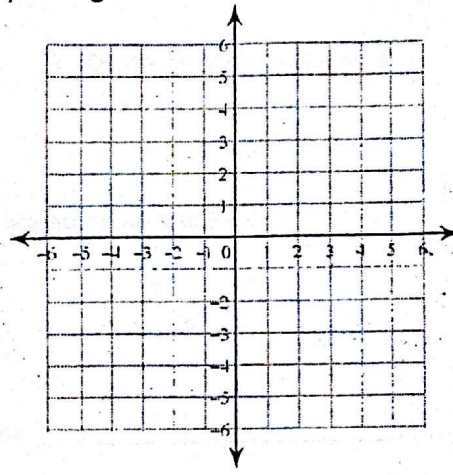
1) Dilate $\triangle QRS$ if $Q(-1, 0)$, $R(-1, 2)$, $S(-2, 1)$ by a magnitude of 2 from the origin.



Q' _____
 R' _____
 S' _____

Rule: _____

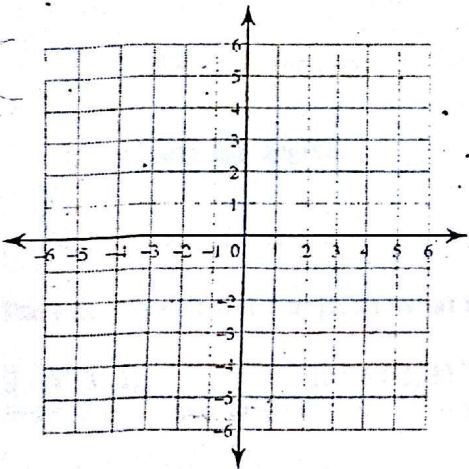
2) Dilate $\triangle TRK$ if $T(-1, -2)$, $R(1, 0)$, $K(0, 1)$ by a magnitude of 3 from the origin.



T' _____
 R' _____
 K' _____

Rule: _____

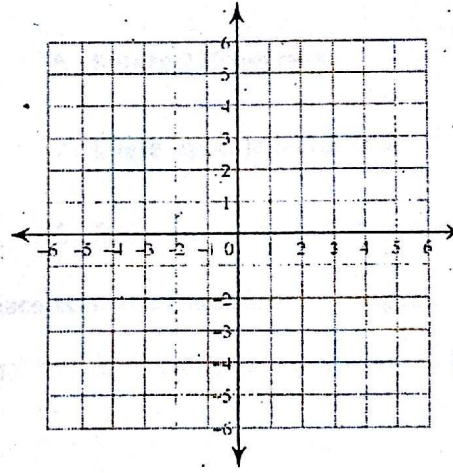
3) Dilate $\triangle XYZ$ if $X(-4, 0)$, $Y(-4, 3)$, $Z(-2, -2)$ by a magnitude of $\frac{1}{2}$ from the origin.



X' _____
 Y' _____
 Z' _____

Rule: _____

4) Dilate $\triangle IBM$ if $I(2, -4)$, $B(1, 2)$, $M(4, 1)$ by a magnitude of $\frac{3}{2}$ from the origin.

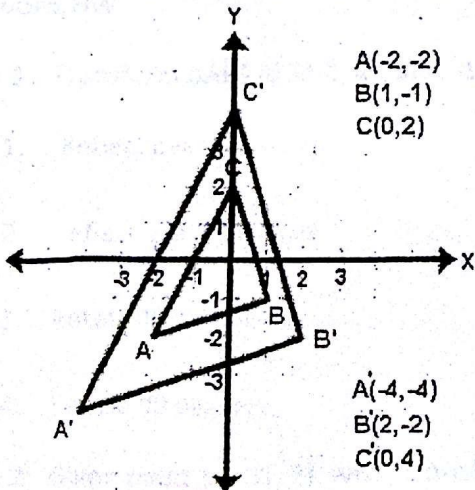


I' _____
 B' _____
 M' _____

Rule: _____

Determine the scale factor that was used to dilate the following figures.

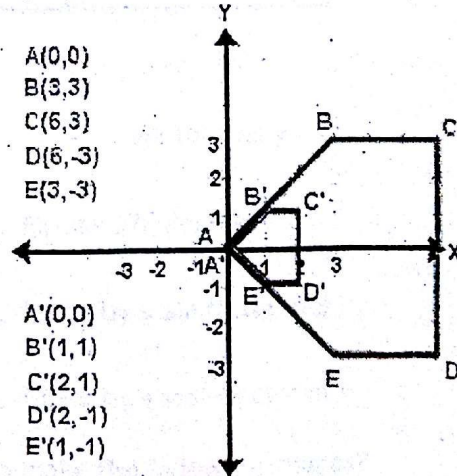
5)



$A(-2, -2)$
 $B(1, -1)$
 $C(0, 2)$

$A'(-4, -4)$
 $B'(2, -2)$
 $C'(0, 4)$

Scale Factor: _____



$A(0, 0)$
 $B(3, 3)$
 $C(6, 3)$
 $D(6, -3)$
 $E(3, -3)$

$A'(0, 0)$
 $B'(1, 1)$
 $C'(2, 1)$
 $D'(2, -1)$
 $E'(1, -1)$

Scale Factor: _____

MORE HW 6-3

Name _____

Part 1: Transform $\triangle ABC$ id $A(-2, 4)$, $B(3, -1)$ and $C(5, 6)$.

- | | |
|----------------------------|--|
| 1. Reflect over the x-axis | 5. Reflect over the line $y = x$ |
| 2. Reflect over the y-axis | 6. Rotate 270 degrees |
| 3. Rotate 180 degrees | 7. Dilate by scale factor or 3 |
| 4. Rotate 90 degrees | 8. Dilate by a scale factor of $\frac{1}{2}$ |

Part 2: Given point A at $(1, 3)$, what transformation took place to make the following images?

- | | | | | |
|---------------|-----------------|-----------------|------------------|----------------|
| 9. $A'(3, 1)$ | 10. $A'(-1, 3)$ | 11. $A'(-3, 1)$ | 12. $A'(-1, -3)$ | 13. $A'(2, 6)$ |
|---------------|-----------------|-----------------|------------------|----------------|

Dilations HW

Name _____

Part 1: Transform $\triangle ABC$ id $A(-2, 4)$, $B(3, -1)$ and $C(5, 6)$.

- | | |
|----------------------------|--|
| 1. Reflect over the x-axis | 5. Reflect over the line $y = x$ |
| 2. Reflect over the y-axis | 6. Rotate 270 degrees |
| 3. Rotate 180 degrees | 7. Dilate by scale factor or 3 |
| 4. Rotate 90 degrees | 8. Dilate by a scale factor of $\frac{1}{2}$ |

Part 2: Given point A at $(1, 3)$, what transformation took place to make the following images?

- | | | | | |
|---------------|-----------------|-----------------|------------------|----------------|
| 9. $A'(3, 1)$ | 10. $A'(-1, 3)$ | 11. $A'(-3, 1)$ | 12. $A'(-1, -3)$ | 13. $A'(2, 6)$ |
|---------------|-----------------|-----------------|------------------|----------------|

Dilations HW

Name _____

Part 1: Transform $\triangle ABC$ id $A(-2, 4)$, $B(3, -1)$ and $C(5, 6)$.

- | | |
|----------------------------|--|
| 1. Reflect over the x-axis | 5. Reflect over the line $y = x$ |
| 2. Reflect over the y-axis | 6. Rotate 270 degrees |
| 3. Rotate 180 degrees | 7. Dilate by scale factor or 3 |
| 4. Rotate 90 degrees | 8. Dilate by a scale factor of $\frac{1}{2}$ |

Part 2: Given point A at $(1, 3)$, what transformation took place to make the following images?

- | | | | | |
|---------------|-----------------|-----------------|------------------|----------------|
| 9. $A'(3, 1)$ | 10. $A'(-1, 3)$ | 11. $A'(-3, 1)$ | 12. $A'(-1, -3)$ | 13. $A'(2, 6)$ |
|---------------|-----------------|-----------------|------------------|----------------|

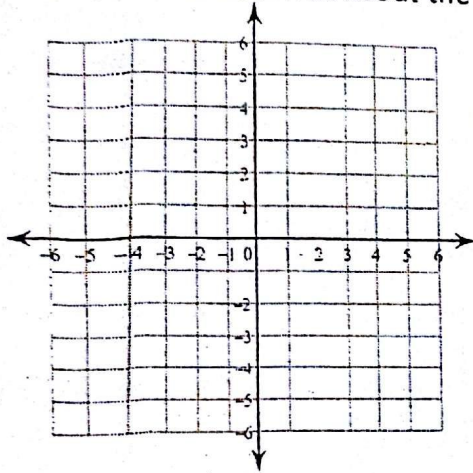
~~Rotations Practice~~ Rotations Practice

Name: _____

Graph the preimage and image. List the coordinates of the image. Then write the rule in proper notation.

1) $\triangle RST$: $R(2, -1)$, $S(4, 0)$, and $T(1, 3)$

90° counter clockwise about the origin.

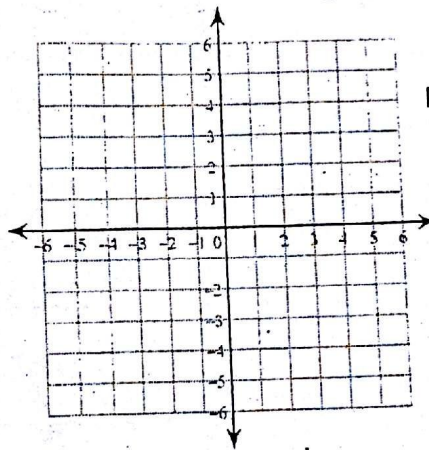


Rule: _____

$R'(\underline{\quad}, \underline{\quad})$ $S'(\underline{\quad}, \underline{\quad})$ $T'(\underline{\quad}, \underline{\quad})$

2) $\triangle FUN$: $F(-4, -1)$, $U(-1, 3)$, and $N(-1, 1)$

180° clockwise about the origin.

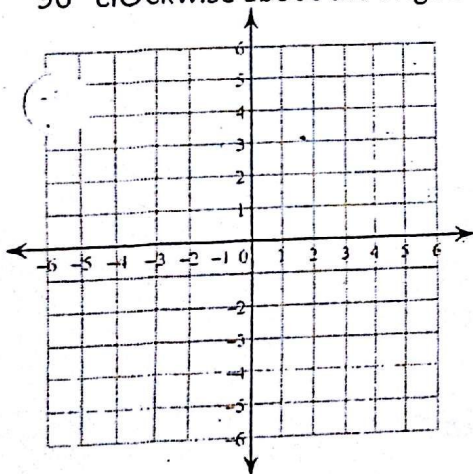


Rule: _____

$F'(\underline{\quad}, \underline{\quad})$ $U'(\underline{\quad}, \underline{\quad})$ $N'(\underline{\quad}, \underline{\quad})$

3) $\triangle TRL$: $T(2, -1)$, $R(0, 4)$, and $L(1, 3)$

90° clockwise about the origin.

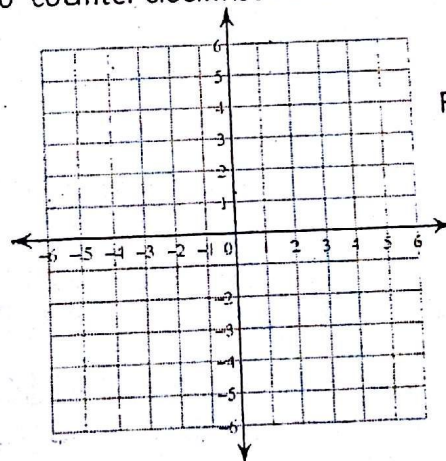


Rule: _____

$T'(\underline{\quad}, \underline{\quad})$ $R'(\underline{\quad}, \underline{\quad})$ $L'(\underline{\quad}, \underline{\quad})$

4) $\triangle CDY$: $C(-4, 2)$, $D(-1, 2)$, and $Y(-1, -1)$

180° counter clockwise about the origin.

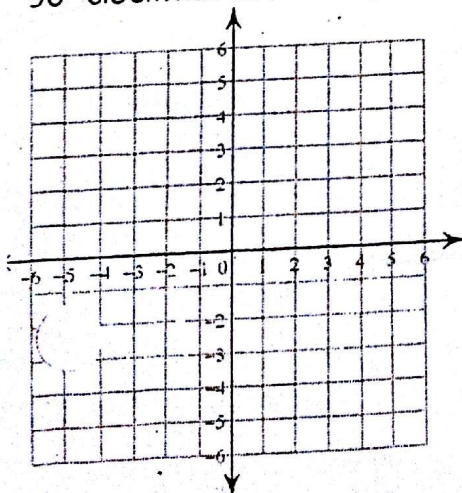


Rule: _____

$C'(\underline{\quad}, \underline{\quad})$ $D'(\underline{\quad}, \underline{\quad})$ $Y'(\underline{\quad}, \underline{\quad})$

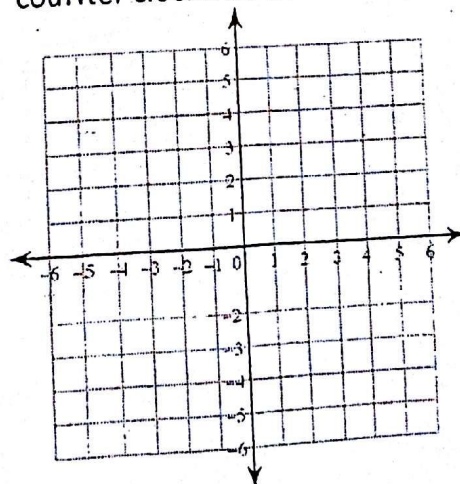
5) $\triangle SCR$: $S(-3, 1)$, $C(-1, 3)$, and $R(-1, -1)$

90° clockwise about the point $(1, -2)$



6) $\triangle SCR$: $S(-3, 1)$, $C(-1, 3)$, and $R(-1, -1)$

90° counter clockwise about the point $(1, -2)$



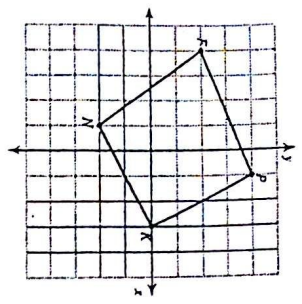
HW 6-4

Write a rule to describe each transformation.

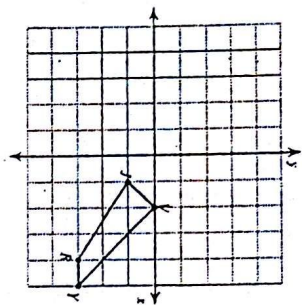
Rotations

Graph the image of the figure using the transformation given.

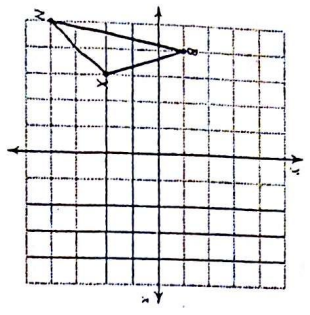
1) rotation 180° about the origin



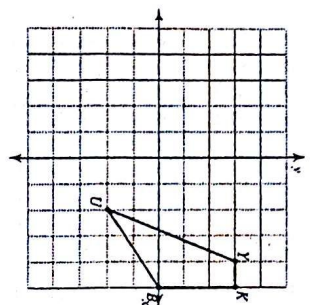
2) rotation 180° about the origin



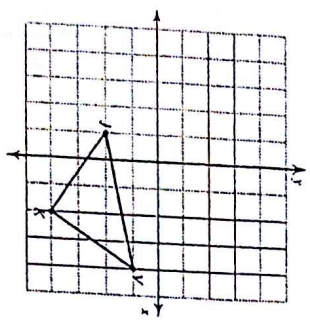
3) rotation 90° counterclockwise about the origin



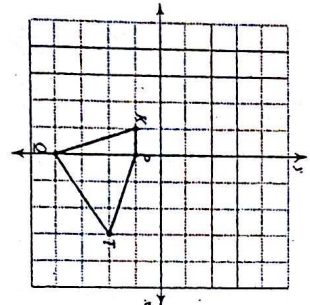
4) rotation 90° clockwise about the origin



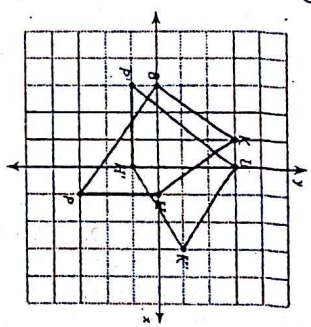
5) rotation 90° clockwise about the origin



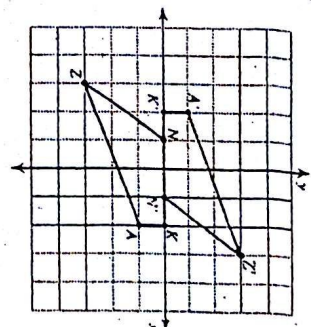
6) rotation 180° about the origin



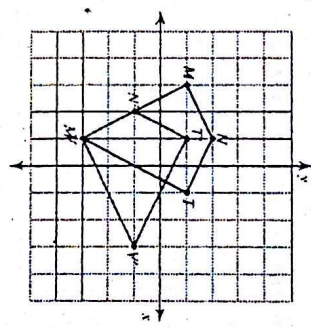
7)



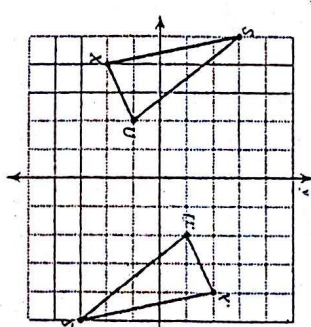
8)



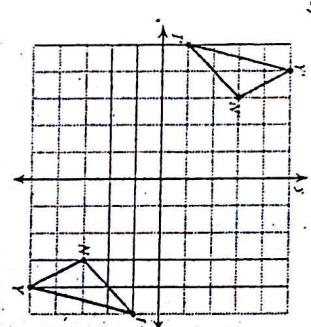
9)



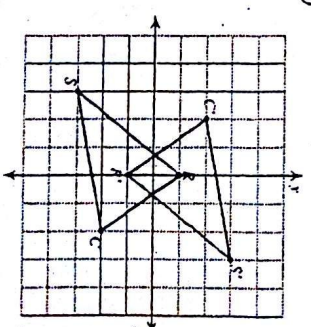
10)



11)



12)

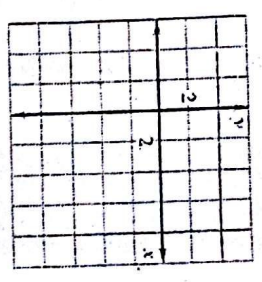
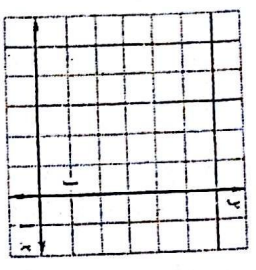
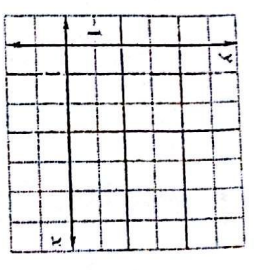


HW 6-53

Worksheet 9.5 Composite Transformations Prep Name _____

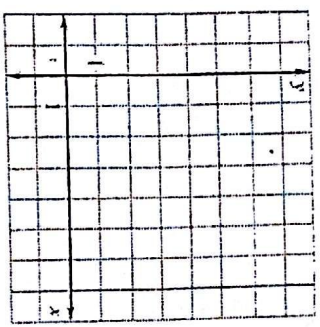
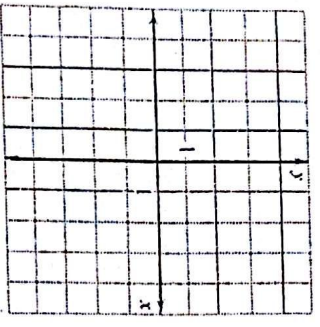
Graph the image of $A(1, -3)$ after the described glide reflection.

- 1) Translation: $(x, y) \rightarrow (x+2, y)$ Reflection: in the x-axis
- 2) Translation: $(x, y) \rightarrow (x-4, y+3)$ Reflection: in $y=2$
- 3) Translation: $(x, y) \rightarrow (x-3, y+2)$ Reflection: in $x=2$

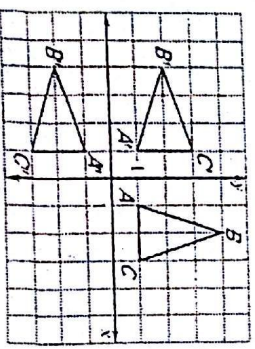
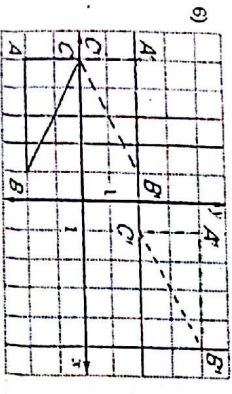


The endpoints of \overline{CD} are $C(1, 2)$ and $D(5, 4)$. Graph the image of \overline{CD} after the glide reflection.

- 4) Translation: $(x, y) \rightarrow (x-4, y)$ Reflection: in x-axis
- 5) Translation: $(x, y) \rightarrow (x, y+2)$ Reflection: in $y=x$

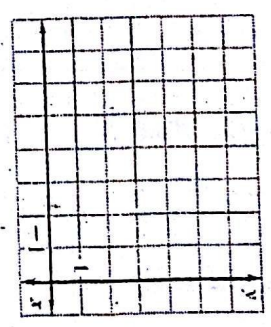
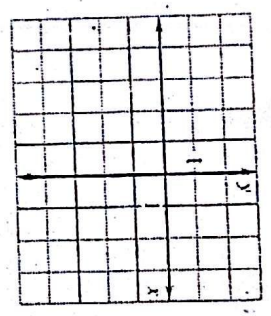


Describe the composition of the transformations.



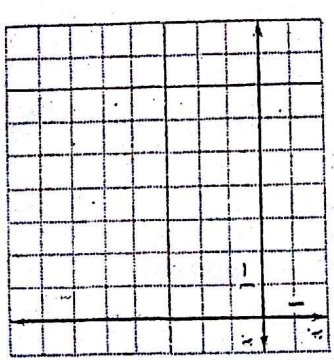
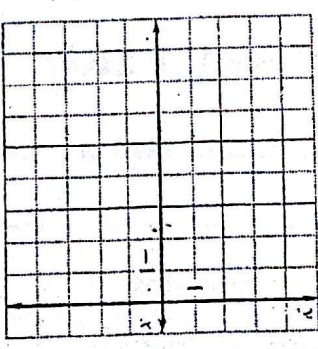
The vertices of $\triangle ABC$ are $A(2, 4)$, $B(7, 6)$, and $C(5, 2)$. Graph the image of $\triangle ABC$ after a composition of the transformations in the order they are listed.

- 8) Translation: $(x, y) \rightarrow (x-4, y-3)$ Reflection: in the x-axis
- 9) Translation: $(x, y) \rightarrow (x-2, y)$ Rotation: 90° about the origin



The vertices of $\triangle ABC$ are $A(3, 1)$, $B(1, 5)$, and $C(5, 3)$. Graph the image of $\triangle ABC$ after a composition of the transformations in the order they are listed.

- 10) Translation: $(x, y) \rightarrow (x+3, y-5)$ Reflection: in the y-axis
- 11) Translation: $(x, y) \rightarrow (x-6, y+1)$ Rotation: 90° about the origin



Match the composition with the diagram.

A. B.

C. D.

- 12) Translate parallel to ℓ then reflect in ℓ .
- 13) Rotate about Q , then translate parallel to ℓ .
- 14) Rotate about Q , then reflect in ℓ .
- 15) Reflect in ℓ , then translate perpendicular to ℓ .