

Geometry CC - Unit 9  
 LESSON 2: Reflections  
 MI.134 Day 1

Homework: 4.2 # 1-14

HW Answers 4.1

Geometry CC - Unit 9  
 LESSON 2: Intro to Rigid Motions  
 MI.132 HOMEWORK

Name: \_\_\_\_\_  
 Date: \_\_\_\_\_

Name each transformation as a reflection, rotation, or translation.

1. Translation

2. Rotation

3. Reflection

4. Reflection, dilation or translation

For the following questions, use the figure shown where  $QRST \rightarrow VWXY$ .

5. Name the preimage of  $ST$ .  
 $QR$

6. Name the image of  $QV$ .  
 $WX$

7. Name two angles that have the same measure.  
 Ex:  $\angle Q$  and  $\angle V$   
 $\angle S$  and  $\angle X$

8. Name a triangle that is congruent to  $QRST$ .  
 $\triangle VWXY$

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10. Name and describe the movement of the transformation.  
 Rotation counterclockwise about the origin

11. Name two sides with the same length.  
 Ex:  $AB$  and  $JK$   
 $CD$  and  $LM$

12. Name two angles with the same measure.  
 Ex:  $\angle A$  and  $\angle J$   
 $\angle E$  and  $\angle N$

13. Name the coordinates of the preimage of point  $L$ .  
 Point  $C (3, -7)$

Name and describe the movement of the transformation, then name the coordinates of the vertices of the image.

14. Reflection  
 Flips right (over  $x=1$ )  
 $A'(9, 7)$   
 $B'(4, 2)$   
 $C'(4, -5)$   
 $D'(9, -5)$

15. Translation  
 Down 5 and Left 12  
 $L'(-12, -4)$   
 $M'(-9, 4)$   
 $N'(-6, -7)$

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Reflection (Flip)  
 Transformation over a line of reflection

PREMADE R  
 IMAGE R

Line of reflection

Draw the line of reflection.

Summary of Reflections:  
 If a point is not on the line of reflection, the line of reflection is a perpendicular bisector of the segment joining the two points.

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Coordinate Plane Rules:

Reflection over the y-axis:  $(x, y) \rightarrow (-x, y)$

Reflection over the x-axis:  $(x, y) \rightarrow (x, -y)$

Reflection over the line  $y = x$ :  $(x, y) \rightarrow (y, x)$

Reflection over the line  $y = -x$ :  $(x, y) \rightarrow (-y, -x)$

Examples:  
 $(4, 2) \rightarrow (-4, 2)$   
 $(x, y) \rightarrow (-x, y)$   
 $(x, y) \rightarrow (y, x)$   
 $(x, y) \rightarrow (-y, -x)$

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$\triangle ABC$  has vertices  $A(-7, -1)$ ,  $B(-5, 5)$ , and  $C(-1, 1)$ . Graph  $\triangle ABC$  and its image if it is reflected over the  $y$ -axis.

$A(-7, -1) \rightarrow A'(7, -1)$   
 $B(-5, 5) \rightarrow B'(5, 5)$   
 $C(-1, 1) \rightarrow C'(1, 1)$

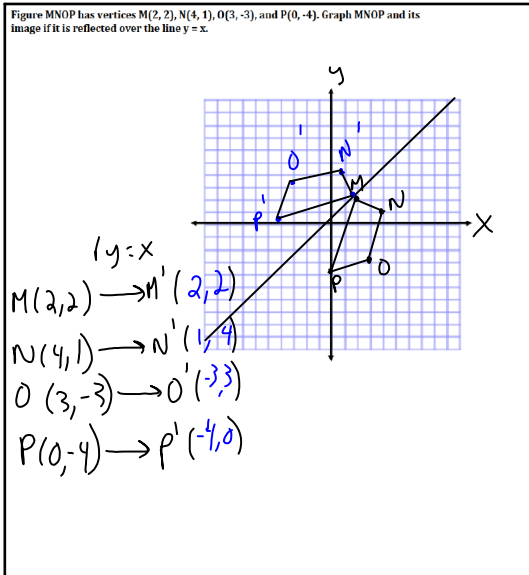
$(x, y) \rightarrow (-x, y)$

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Parallelogram  $RSTU$  has vertices  $R(-4, 1)$ ,  $S(2, 3)$ ,  $T(4, -1)$ , and  $U(-2, -3)$ . Graph  $RSTU$  and its image if it is reflected over the  $x$ -axis.

$R(-4, 1) \rightarrow R'(-4, -1)$   
 $S(2, 3) \rightarrow S'(2, -3)$   
 $T(4, -1) \rightarrow T'(4, 1)$   
 $U(-2, -3) \rightarrow U'(-2, 3)$

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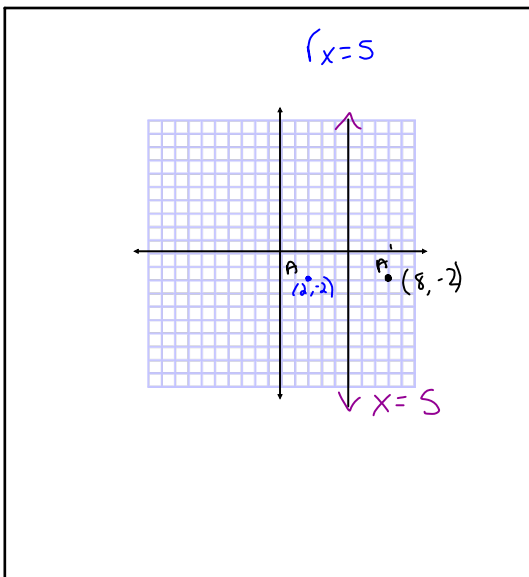


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reflections

- ①  $r_{x\text{-axis}} (x, y) \rightarrow (x, -y)$
- ②  $r_{y\text{-axis}} (x, y) \rightarrow (-x, y)$
- ③  $r_{y=x} (x, y) \rightarrow (y, x)$
- ④  $r_{y=-x} (x, y) \rightarrow (-y, -x)$

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