

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

Unit 9: Transformations



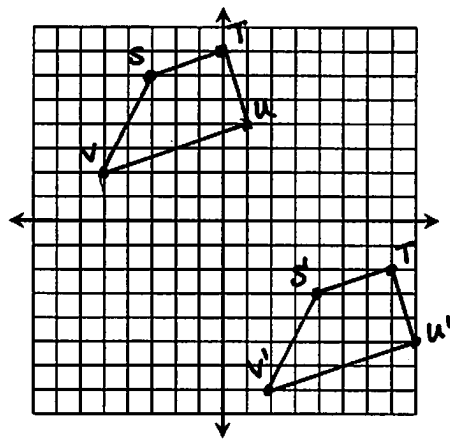
Date: \_\_\_\_\_ Per: \_\_\_\_\_

Homework 1: Translations

**\*\* This is a 2-page document! \*\***

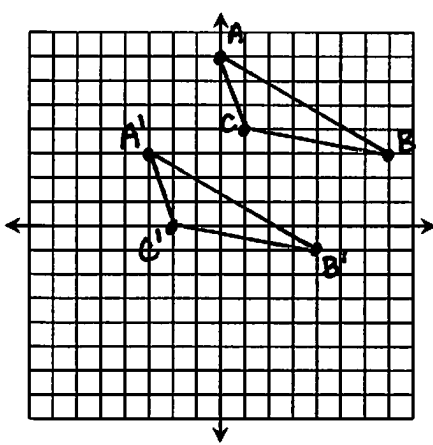
**Directions:** Graph and label each figure and its image under the given translation. Give the coordinates of the image.

1. Trapezoid  $STUV$  with vertices  $S(-3, 6)$ ,  $T(0, 7)$ ,  $U(1, 4)$ , and  $V(-5, 2)$ :  $(x, y) \rightarrow (x + 7, y - 9)$



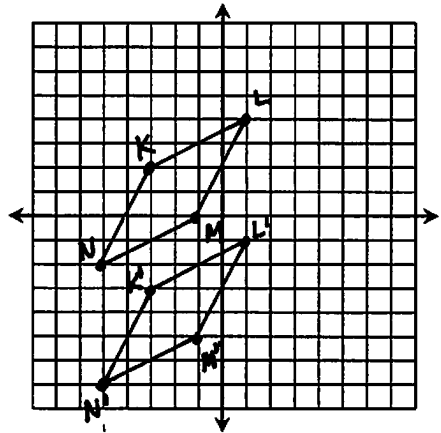
$S'(\underline{4}, \underline{-3})$   
 $T'(\underline{7}, \underline{-2})$   
 $U'(\underline{8}, \underline{-5})$   
 $V'(\underline{2}, \underline{-7})$

2. Triangle  $ABC$  with vertices  $A(0, 7)$ ,  $B(7, 3)$ , and  $C(1, 4)$ :  $(x, y) \rightarrow (x - 3, y - 4)$



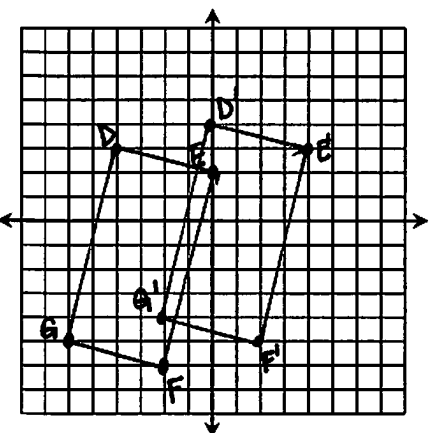
$A'(\underline{-3}, \underline{3})$   
 $B'(\underline{4}, \underline{-1})$   
 $C'(\underline{-2}, \underline{0})$

3. Rhombus  $KLMN$  with vertices  $K(-3, 2)$ ,  $L(1, 4)$ ,  $M(-1, 0)$ , and  $N(-5, -2)$ :  $(x, y) \rightarrow (x, y - 5)$



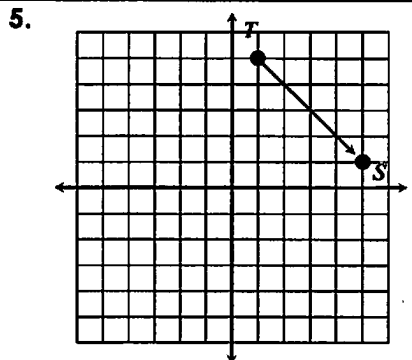
$K'(\underline{-3}, \underline{-3})$   
 $L'(\underline{1}, \underline{-1})$   
 $M'(\underline{-1}, \underline{-5})$   
 $N'(\underline{-5}, \underline{-7})$

4. Rectangle  $DEFG$  with vertices  $D(-4, 3)$ ,  $E(0, 2)$ ,  $F(-2, -6)$ , and  $G(-6, -5)$ :  $(x, y) \rightarrow (x + 4, y + 1)$

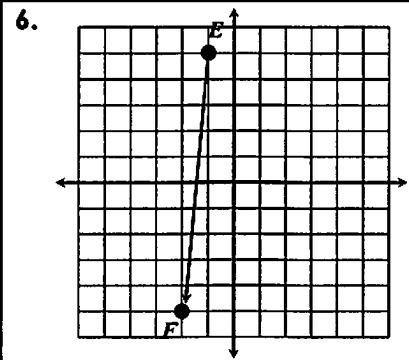


$D'(\underline{0}, \underline{4})$   
 $E'(\underline{4}, \underline{3})$   
 $F'(\underline{2}, \underline{-5})$   
 $G'(\underline{-2}, \underline{-4})$

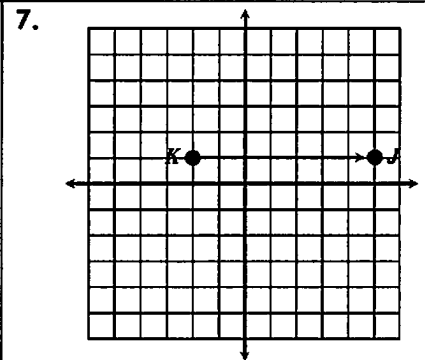
**Name each vector, then write the vector in component form.**



$\vec{TS} = \langle 4, -4 \rangle$



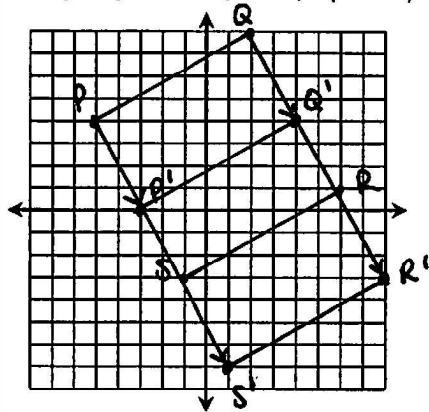
$\vec{EF} = \langle -1, -10 \rangle$



$\vec{KJ} = \langle 7, 0 \rangle$

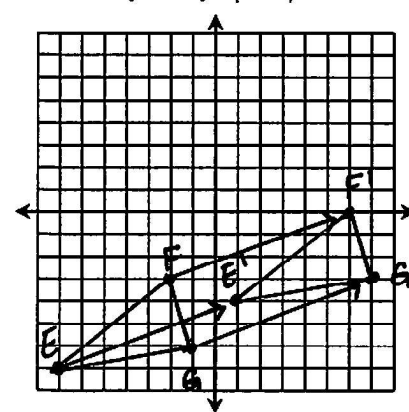
**Directions:** Graph and label each figure and its image under the translation along the given vector. Identify the coordinates of the image.

8. Square  $PQRS$  with vertices  $P(-5, 4)$ ,  $Q(2, 8)$ ,  $R(6, 1)$ , and  $S(-1, -3)$ :  $\langle 2, -4 \rangle$



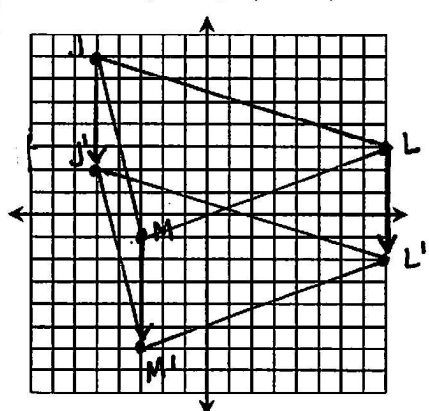
$P'(-3, 0)$   
 $Q'(4, 4)$   
 $R'(8, -3)$   
 $S'(1, -7)$

9. Triangle  $EFG$  with vertices  $E(-7, -7)$ ,  $F(-2, -3)$ , and  $G(-1, -6)$ :  $\langle 8, 3 \rangle$



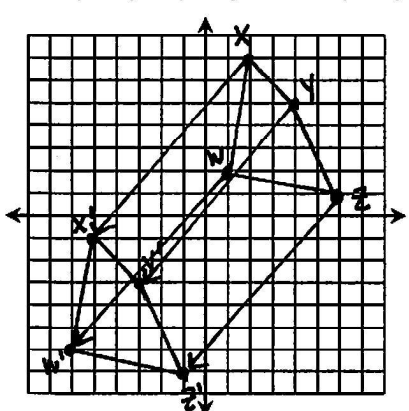
$E'(1, -4)$   
 $F'(6, 0)$   
 $G'(-7, -3)$

10. Triangle  $JLM$  with vertices  $J(-5, 7)$ ,  $L(8, 3)$ , and  $M(-3, -1)$ :  $\langle 0, -5 \rangle$



$J'(-5, 2)$   
 $L'(8, -2)$   
 $M'(-3, -6)$

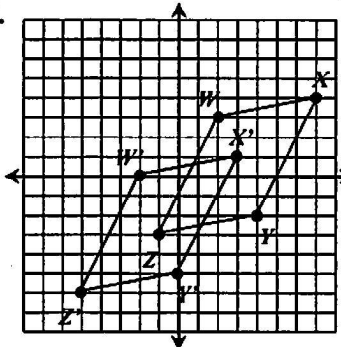
11. Quadrilateral  $WXYZ$  with vertices  $W(1, 2)$ ,  $X(2, 7)$ ,  $Y(4, 5)$ , and  $Z(6, 1)$ :  $\langle -7, -8 \rangle$



$W'(-6, -6)$   
 $X'(-5, -1)$   
 $Y'(-3, -3)$   
 $Z'(-1, -7)$

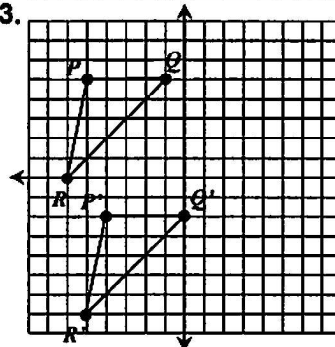
**Directions:** Describe the translation that maps each preimage to its image in (a) coordinate notation and (b) as a vector in component form.

12. a)  $(x, y) \rightarrow (x-4, y-3)$



b)  $\langle -4, -3 \rangle$

13. a)  $(x, y) \rightarrow (x+1, y-7)$



b)  $\langle 1, -7 \rangle$

14.  $K'(-8, 6)$  is the image of  $K$  after a translation along the rule  $(x, y) \rightarrow (x-3, y+6)$ . What are the coordinates of  $K$ ?

$K(-5, 0)$

15.  $P'(1, -2)$  is the image of  $P$  after a translation along the vector  $\langle -8, 0 \rangle$ . What are the coordinates of  $P$ ?

$P(9, -2)$