NAME _____ DATE _____ PERIOD _____

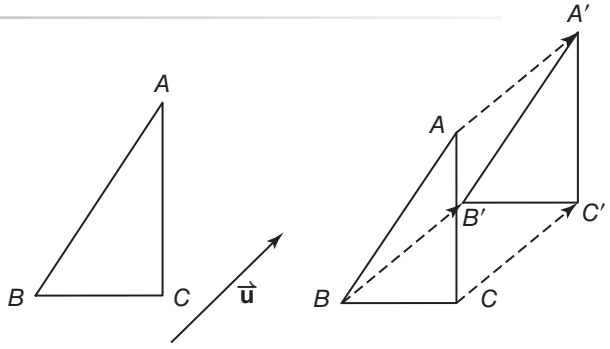
9-2 Study Guide and Intervention

Translations

Draw Translations A **translation** is a transformation that moves all points of a figure the same distance in the same direction. Vectors can be used to describe the distance and direction of the translation.

Example **Draw the translation of the figure along the translation vector.**

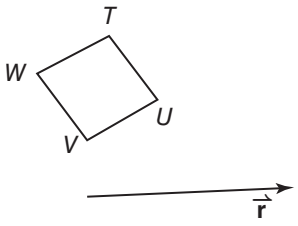
Draw a line through each vertex parallel to vector $\overrightarrow{u}$. Measure the length of vector $\overrightarrow{u}$. Locate the image of each point by marking off this distance along the line through each vertex. Start at the vertex and move in the same direction as the vector.



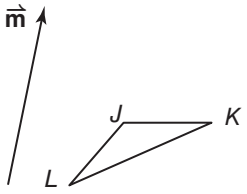
Exercises

Use the figure and the given translation vector. Then draw the translation of the figure along the translation vector.

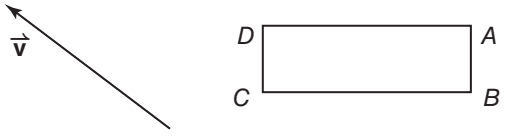
1.



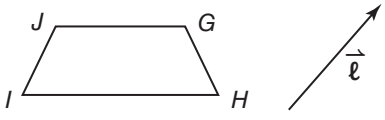
2.



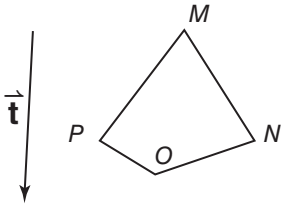
3.



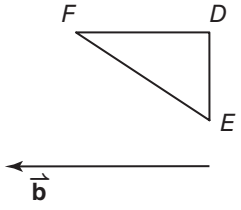
4.



5.



6.



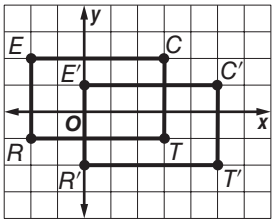
Lesson 9-2

9-2 Study Guide and Intervention *(continued)*

Translations

Translations In The Coordinate Plane A vector can be used to translate a figure on the coordinate plane when written in the form $\langle a, b \rangle$ where a represents the horizontal change and b represents the vertical change from the vector's tip to its tail.

Example **Rectangle *RECT* has vertices *R*(−2, −1), *E*(−2, 2), *C*(3, 2), and *T*(3, −1). Graph the figure and its image along the vector ⟨2, −1⟩.**



The vector indicates a translation 2 units right and 1 unit down.

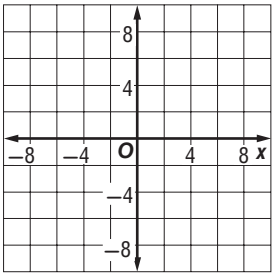
(x, y)	$\rightarrow$	$(x + 2, y - 1)$
$R(-2, -1)$	$\rightarrow$	$R'(0, -2)$
$E(-2, 2)$	$\rightarrow$	$E'(0, 1)$
$C(3, 2)$	$\rightarrow$	$C'(5, 1)$
$T(3, -1)$	$\rightarrow$	$T'(5, -2)$

Graph *RECT* and its image $R'E'C'T'$.

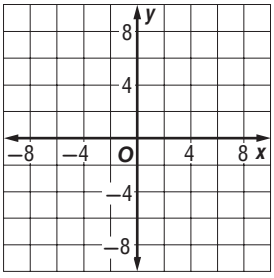
Exercises

Graph each figure and its image along the given vector.

1. quadrilateral *TUVW* with vertices $T(-3, -8)$, $U(-6, 3)$, $V(0, 3)$, and $W(3, 0)$; $\langle 4, 5 \rangle$



2. $\triangle QRS$ with vertices $Q(2, 5)$, $R(7, 1)$, and $S(-1, 2)$; $\langle -1, -2 \rangle$



3. parallelogram *ABCD* with vertices $A(1, 6)$, $B(4, 5)$, $C(1, -1)$, and $D(-2, 0)$; $\langle 3, -2 \rangle$