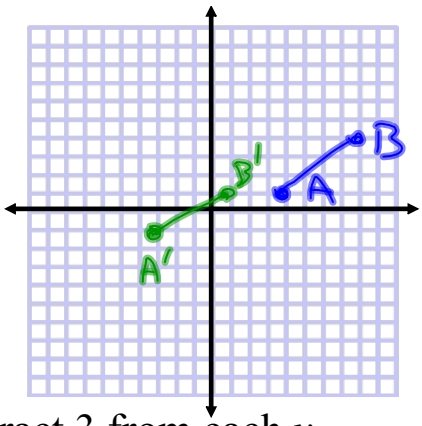
# Warm Up

1. Graph the points $A(4, 1)$ and $B(8, 4)$

A'(-3,-2) B'(1, 1)




2. Subtract 7 from each $x$-value and subtract 3 from each $y$-value. Graph these new points. Label them $A'$ and $B'$.

3. Is $AB$ the same as $A'B'$ ? Yes
Is the slope of $\overline{AB}$ the same as the slope of $\overline{A'B'}$

Yes

## 9.1 Translate Figures and Use Vectors

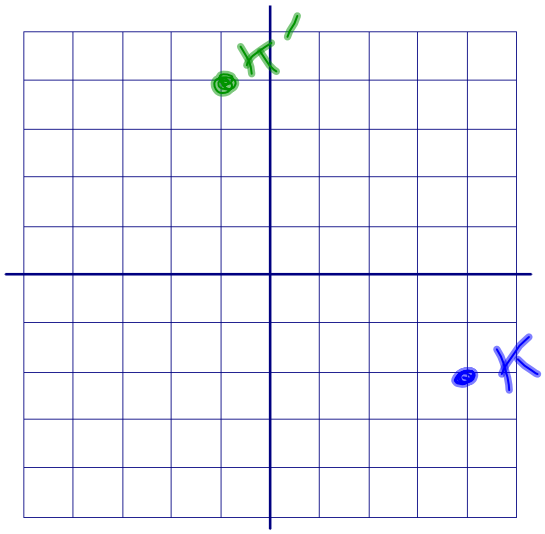
Pre-image — original figure

Image — new figure

Translation — shift

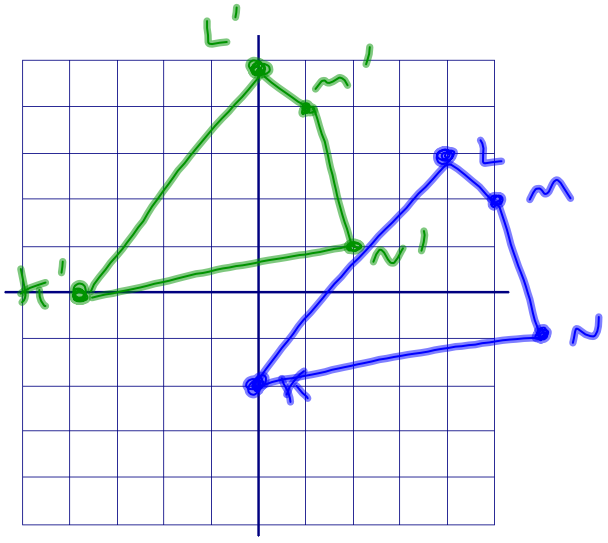
Isometry — a transformation that preserves lengths + angle measures

Ex 1: Graph the point $K(4, -2)$. Find the image of the point after the translation $(x, y) \rightarrow (x - 5, y + 6)$. Then graph the image using prime notation.

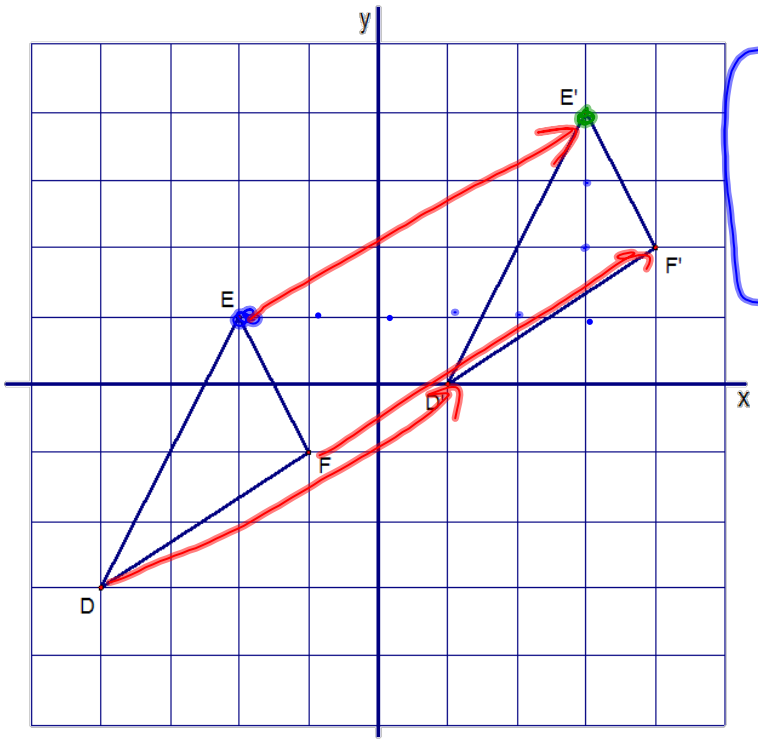



K'(-1, 4)

Ex 2 Graph the quadrilateral $KLMN$ with vertices $K(0, -2)$, $L(4,3)$, $M(5,2)$, and $N(6,-1)$. Find the image of each vertex after the translation $(x,y) \rightarrow (x - 4, y + 2)$. Then graph the image using prime notation.



Ex 3 Write a rule for the translation of $\Delta DEF$ to $\Delta D'E'F'$.
Then verify that the transformation is an isometry

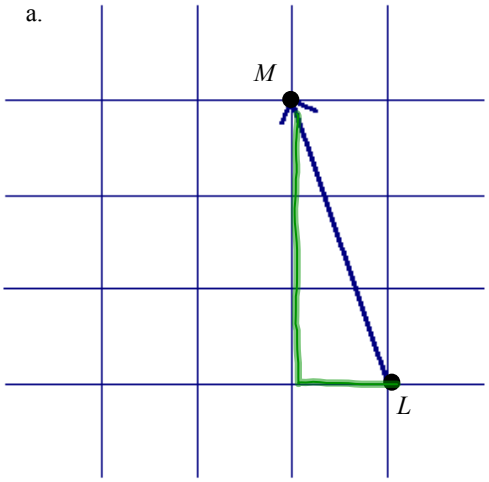



$(x, y) \rightarrow (x+5, y+3)$

Vector — A quantity represented by an arrow with both direction and magnitude

Ex 4 Name the vector and write its component form

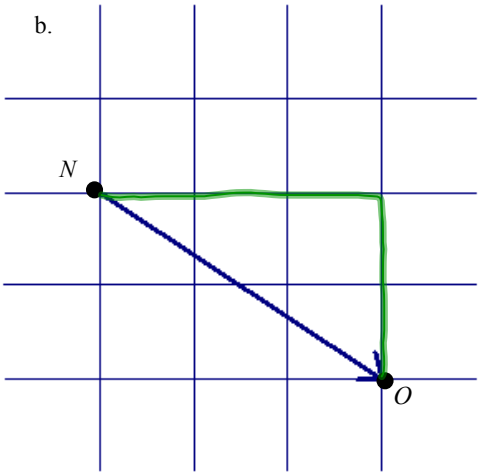
a.




$\overrightarrow{LM}$

$\langle -1, 3 \rangle$

b.




$\overrightarrow{NO}$

$\langle 3, -2 \rangle$

Ex 5 The vertices of $\Delta ABC$ are $A(0,3)$, $B(2,4)$, and $C(1,0)$. Translate $\Delta ABC$ using vector <5, -1>.

x y