

Translations

Transformation—an operation that moves or changes a figure in the coordinate plane

- Preimage—original figure
- Image—figure after the transformation
- Isometry—a transformation where the image is congruent to the preimage

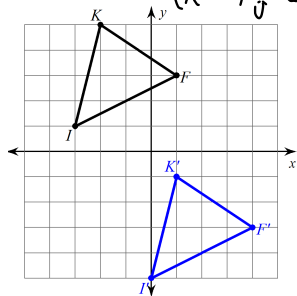
Translation—moves every point of a figure the same distance in the same direction $(x+3, y-6)$

Coordinate Notation

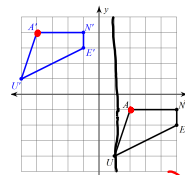
$$(x, y) \rightarrow (x + a, y + b)$$

a units **horizontally** and b units **vertically**

$$\triangle IKF \rightarrow \triangle I'K'F'$$



Use coordinate notation to describe the translation.



1 unit down and 3 units to the right

$$(x+3, y-1)$$

$$(x-6, y+5)$$

Use the translation $(x, y) \rightarrow (x - 8, y + 7)$.

What is the image of $A(11, 3)$?

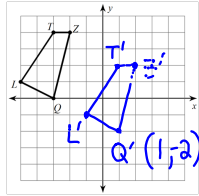
$$-8 + 7 \quad A'(3, 10)$$

What is the preimage of $B'(-2, 0)$?

$$+8 - 1 \quad B(6, -7)$$

Graph the described translation. Give the coordinates of Q' .

$(x, y) \rightarrow (x + 4, y - 2)$



Complete the statement using the description of the translation.

If $(2, 6)$ translates to $(-3, 9)$, then $(0, 5)$ translates to $(?, ?)$.
 -5 +3 (-5, 8)

If $(2, 6)$ translates to $(?, ?)$, then $(0, 5)$ translates to $(4, -1)$.
 +4 -6 (6, 0)

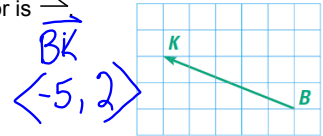
Vector—a quantity that has both direction and magnitude

- **Initial point**—starting point of a vector <https://www.youtube.com/watch?v=cb0e00M88>
- **Terminal point**—ending point of a vector
- Represented as an arrow drawn between points.
- The symbol for a vector is \vec{AB}

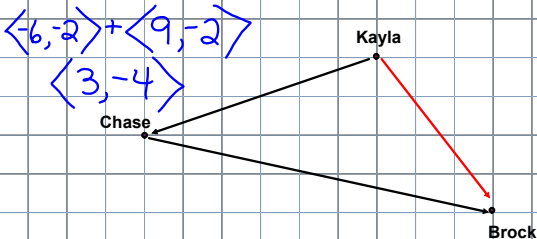
Component Form

$\langle a, b \rangle$

a is the **horizontal** component and
 b is the **vertical** component



Kayla throws the ball to Chase and then Chase throws to Brock. Write the vector in component form for the composition of translations.



Conclusion

1. What does a translation do?
Moves
2. How is a vector like a translation?
Shows directions
3. What does a vector have?
Direction + magnitude
4. Questions????

Assignment

Translation Wkst