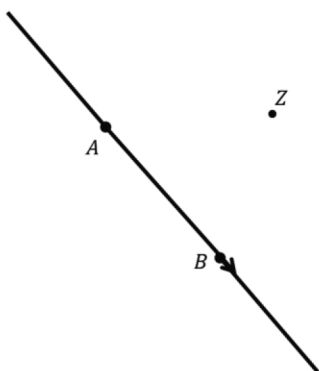


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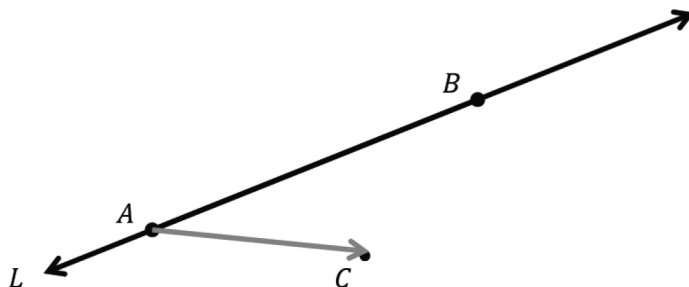
Translating Lines

1. Translate point Z along vector \overrightarrow{AB} . What do you know about the line containing vector \overrightarrow{AB} and the line formed when you connect Z to its image Z' ?

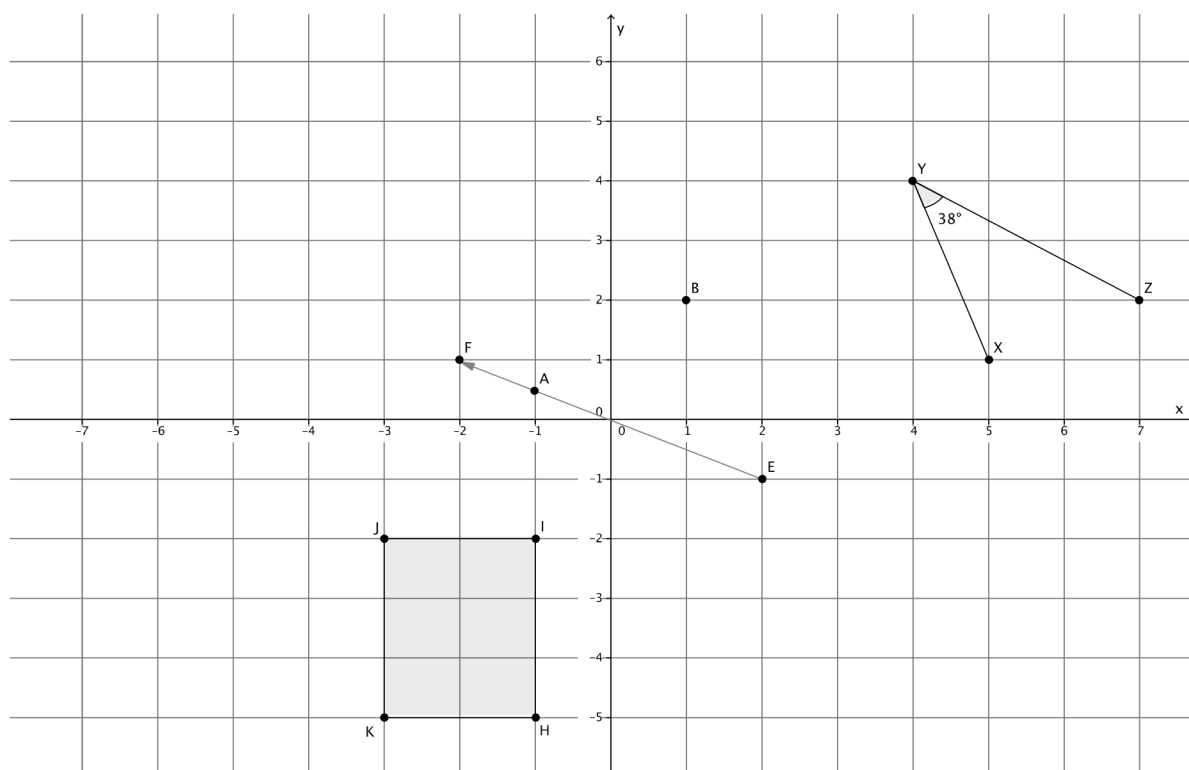


2. Using the above diagram, what do you know about the lengths of segments ZZ' and AB ?

3. Let points A and B be on line L , and the vector \overrightarrow{AC} be given, as shown below. Translate line L along vector \overrightarrow{AC} . What do you know about line L and its image, L' ? How many other lines can you draw through point C that have the same relationship as L and L' ? How do you know?



1. Translate $\angle XYZ$, point A , point B , and rectangle $H I J K$ along vector \overrightarrow{EF} . Sketch the images and label all points using prime notation.



2. What is the measure of the translated image of $\angle XYZ$. How do you know?
3. Connect B to B' . What do you know about the line formed by BB' and the line containing the vector \overrightarrow{EF} ?
4. Connect A to A' . What do you know about the line formed by AA' and the line containing the vector \overrightarrow{EF} ?
5. Given that figure $H I J K$ is a rectangle, what do you know about lines HI and JK and their translated images? Explain.

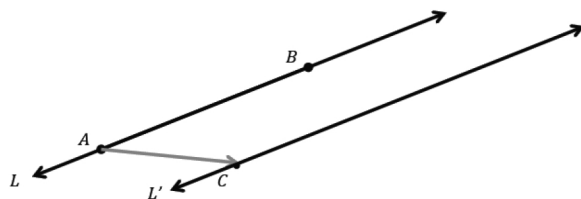
1. Translate point Z along vector \overrightarrow{AB} . What do you know about the line containing vector \overrightarrow{AB} and the line formed when you connect Z to its image Z' ?

The line containing vector \overrightarrow{AB} and ZZ' is parallel.

2. Using the above diagram, what do you know about the lengths of segment ZZ' and segment AB ?

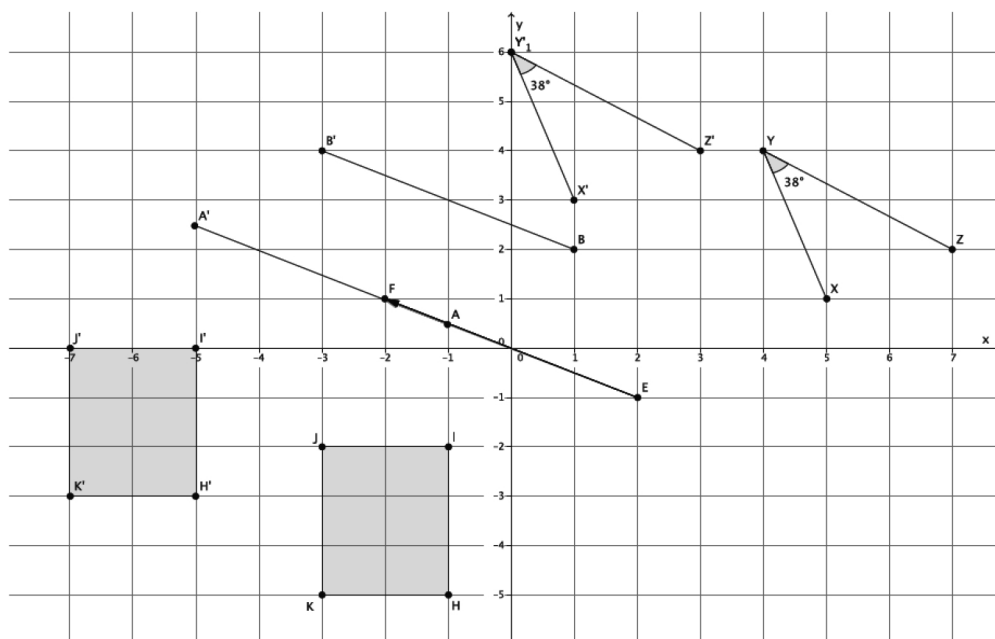
The lengths are equal: $|ZZ'| = |AB|$.

3. Let points A and B be on line L , and the vector \overrightarrow{AC} be given, as shown below. Translate line L along vector \overrightarrow{AC} . What do you know about line L and its image, L' ? How many other lines can you draw through point C that have the same relationship as L and L' ? How do you know?



L and L' are parallel. There is only one line parallel to line L that goes through point C . The fact that there is only one line through a point parallel to a given line guarantees it.

1. Translate $\angle XYZ$, point A , point B , and rectangle HJK along vector \overrightarrow{EF} . Sketch the images and label all points using prime notation.



2. What is the measure of the translated image of $\angle XYZ$. How do you know?

The measure is 38° . Translations preserve angle measure.

3. Connect B to B' . What do you know about the line formed by BB' and the line containing the vector \overrightarrow{EF} ?

$BB' \parallel \overrightarrow{EF}$.

4. Connect A to A' . What do you know about the line formed by AA' and the line containing the vector \overrightarrow{EF} ?

AA' and \overrightarrow{EF} coincide.

5. Given that figure $H'I'J'K'$ is a rectangle, what do you know about lines HI and JK and their translated images? Explain.

Since $H'I'J'K'$ is a rectangle, I know that $HI \parallel JK$. Since translations map parallel lines to parallel lines, then $H'I' \parallel J'K'$.