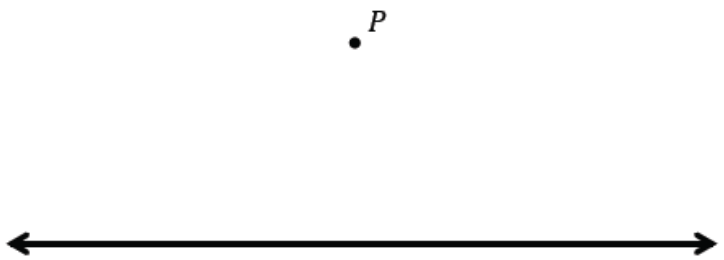
Lesson 3: Translating Lines

Classwork

Exercises

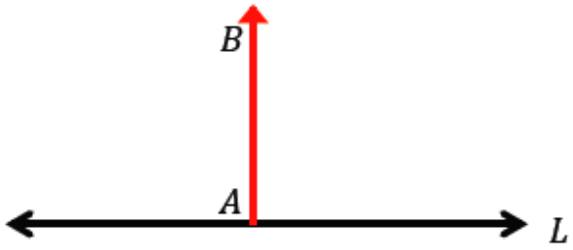
1. Draw a line passing through point P that is parallel to line L. Draw a second line passing through point P that is parallel to line L, and that is distinct (i.e., different) from the first one. What do you notice?



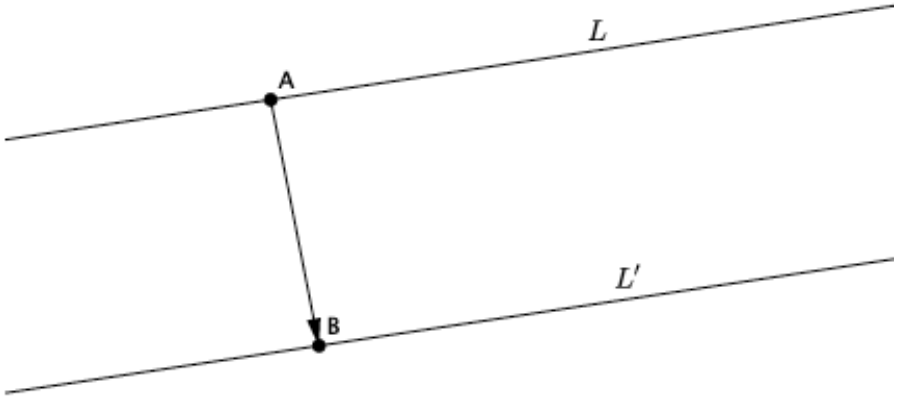
2. Translate line L along the vector $\overrightarrow{AB}$. What do you notice about L and its image L'?

3. Line L is parallel to vector $\overrightarrow{AB}$. Translate line L along vector $\overrightarrow{AB}$. What do you notice about L and its image, L'?

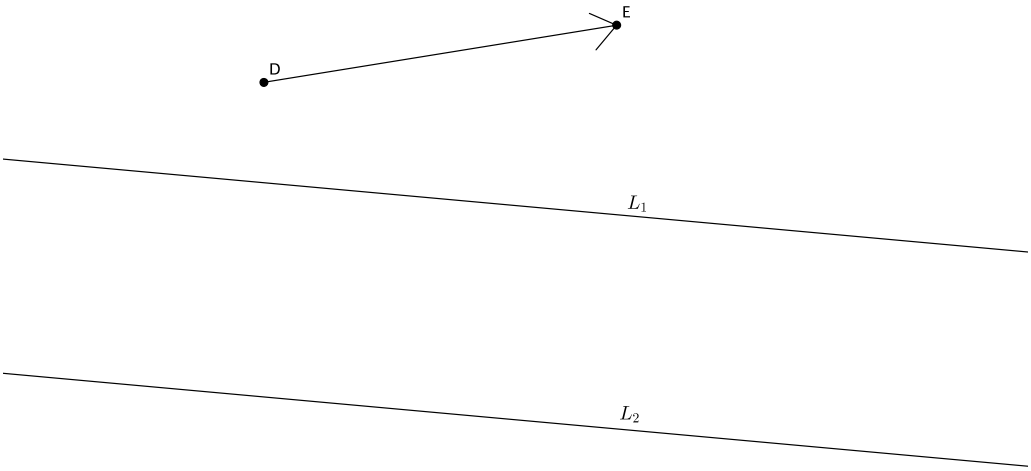
4. Translate line L along the vector $\overrightarrow{AB}$. What do you notice about L and its image, L'?



5. Line L has been translated along vector $\overrightarrow{AB}$ resulting in L'. What do you know about lines L and L'?



6. Translate L_1 and L_2 along vector $\overrightarrow{DE}$. Label the images of the lines. If lines L_1 and L_2 are parallel, what do you know about their translated images?

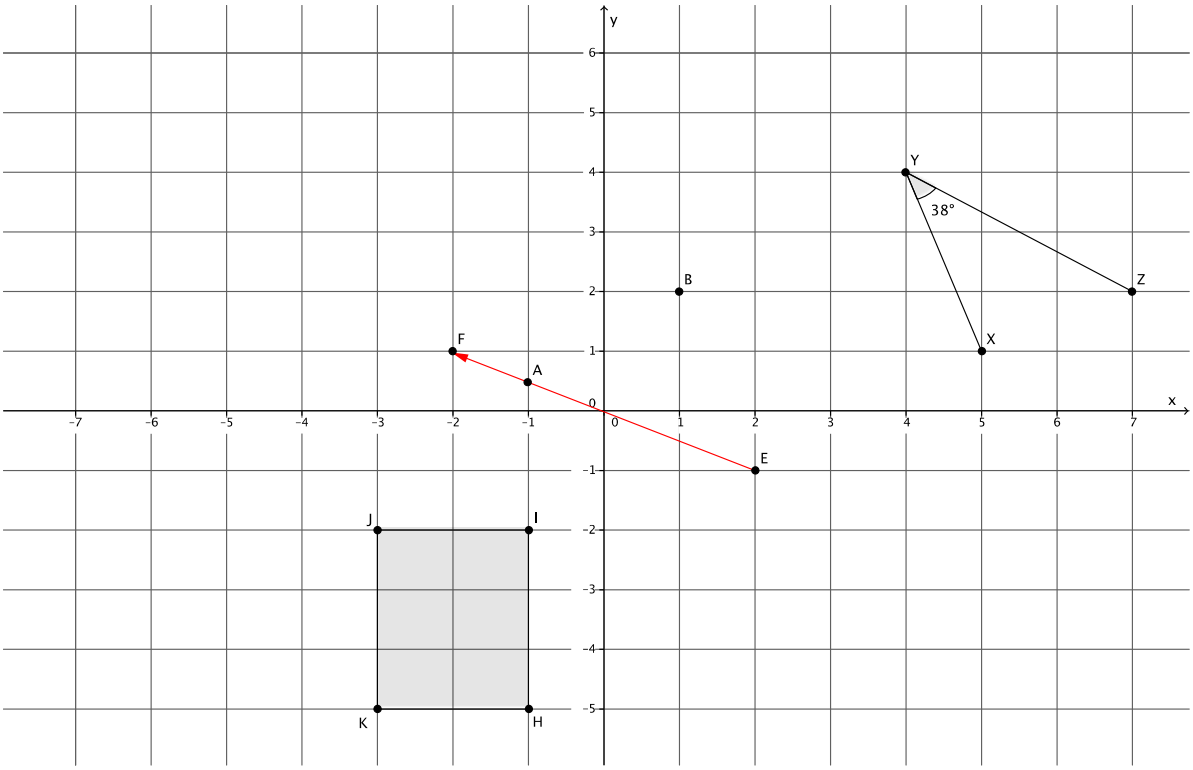


Lesson Summary

- Two lines are parallel if they do not intersect.
- Translations map parallel lines to parallel lines.
- Given a line L and a point P not lying on L, there is at most one line passing through P and parallel to L.

Problem Set

1. Translate $\angle XYZ$, point A, point B, and rectangle $HIJK$ 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 $HIJK$ is a rectangle, what do you know about lines HI and JK and their translated images? Explain.