Unit 1, Lesson 8

Transformations

Let’s review rigid transformations.

8.1 Tile Transformations

1. Describe how you can get from Figure A to Figure A'.

2. Describe how you can get from Figure B to Figure B'.

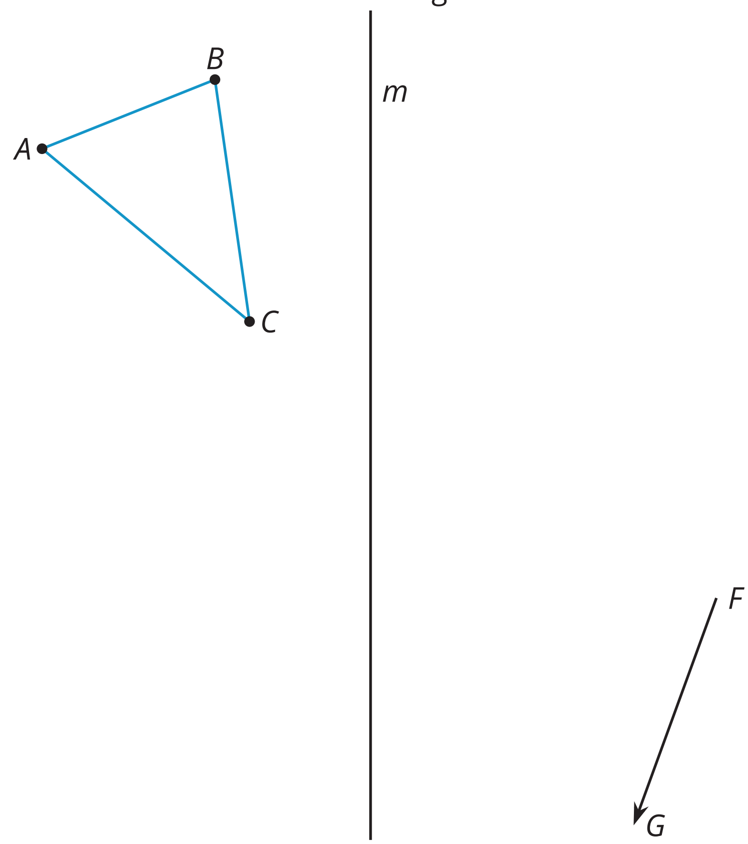
8.2 Card Sort: Name That Image

Your teacher will give you a set of cards. Take turns with your partner to match an image with a description of the transformation shown.

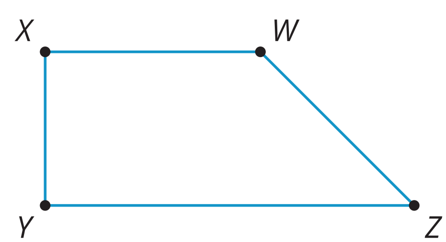
1. For each match that you find, explain to your partner how you know it's a match.
2. For each match that your partner finds, listen carefully to their explanation. If you disagree, discuss your thinking and work to reach an agreement.

8.3 Where's the Triangle?

1. Perform the following transformations.
   a. Translate triangle ABC by directed line segment FG. Label the new image $A'B'C'$.
   b. Reflect $A'B'C'$ over line m. Label the newest image $A''B''C''$.

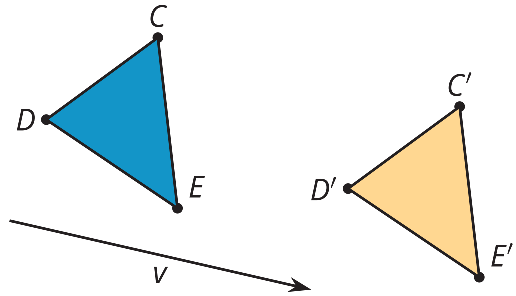


2. Rotate trapezoid $WXYZ$ clockwise by the measure of angle YZW, using center Z.



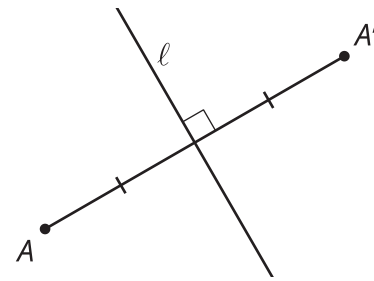
Lesson 8 Summary

A translation slides a figure a given distance in a given direction. The distance and direction are given by a directed line segment. Here is a translation of 3 points. Notice the directed line segments CC', DD', and EE' are each parallel to directed line segment v, go in the same direction as v, and are the same length as v.



We define a reflection across a line ℓ as a transformation that takes each point A to a point A' as follows: A' lies on the line passing through A that is perpendicular to ℓ, points A and A' are on opposite sides of line ℓ, and points A' and A are the same distance from line ℓ. If A happens to be on line ℓ, then A and A' are both at the same location (they are both a distance of 0 from line ℓ).

$\overline{AA'} \perp \ell$



A rotation is a transformation with a center, angle, and direction (clockwise or counterclockwise). Let's rotate a point P around a center point C in a counterclockwise direction by an angle that measures t degrees. This is how point P is transformed:

- The rotation takes point P to a point P' on a circle with a radius of length CP.
- P rotates counterclockwise around the circle to end at P'.
- The angle PCP' measures t degrees.

$\overline{PC} \cong \overline{P'C}$