# 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'.

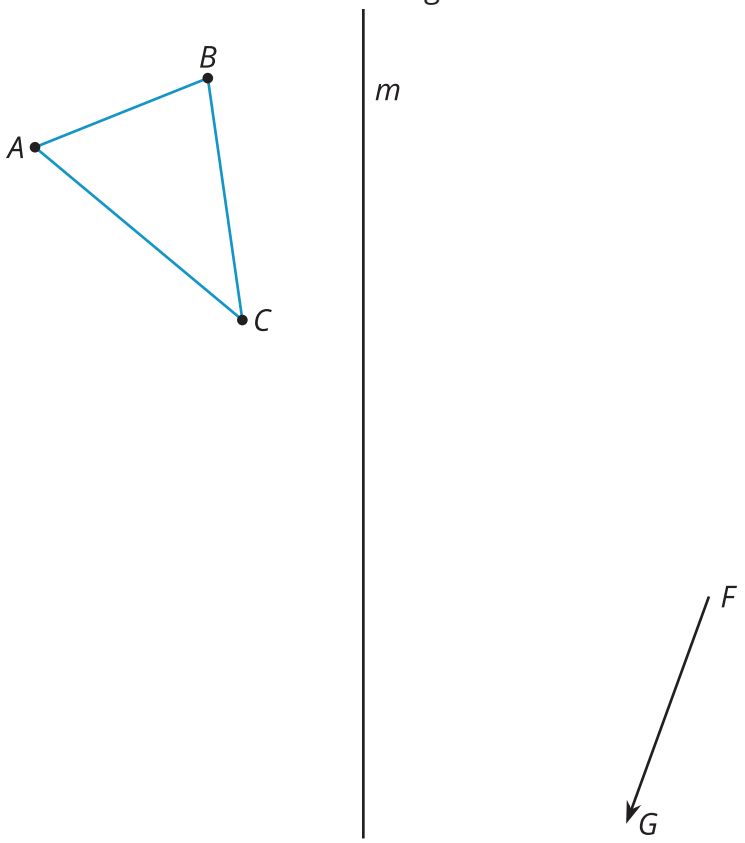
# 8.2 Card Sort: Name That Image

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.

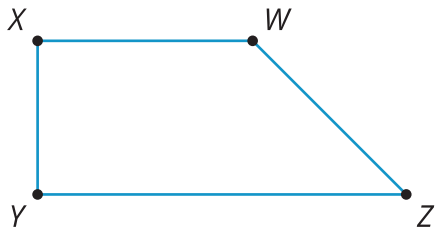
1. For each match that you find, explain to your partner how you know it's a match.
2. For each match that your partner finds, listen carefully to their explanation. If you disagree, discuss your thinking and work to reach an agreement.

# 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 $A''B''C''$.

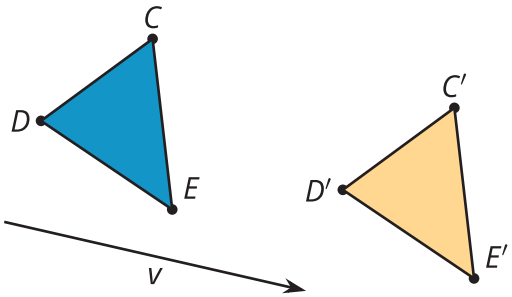



2. Rotate trapezoid $WXYZ$ clockwise by the measure of angle $YZW$, using center $Z$.

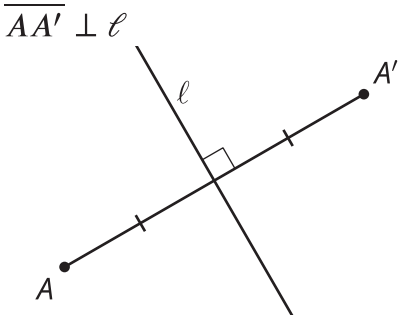


## Lesson 8 Summary

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 $\ell$ 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 $\ell$, points $A$ and $A'$ are on opposite sides of line $\ell$, and points $A'$ and $A$ are the same distance from line $\ell$. If $A$ happens to be on line $\ell$, then $A$ and $A'$ are both at the same location (they are both a distance of 0 from line $\ell$).




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.

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

