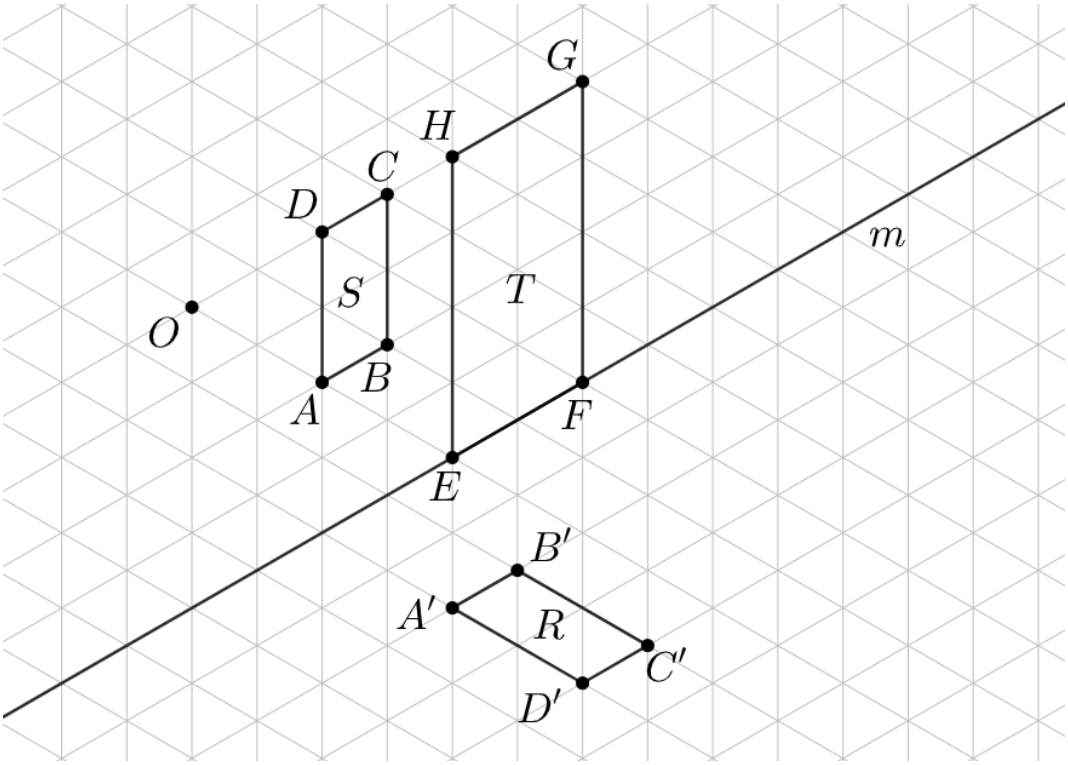
Name: _____

Lesson 1.07
Rigid Motion

Geometry GT

Analyze

What do you notice? What do you wonder?

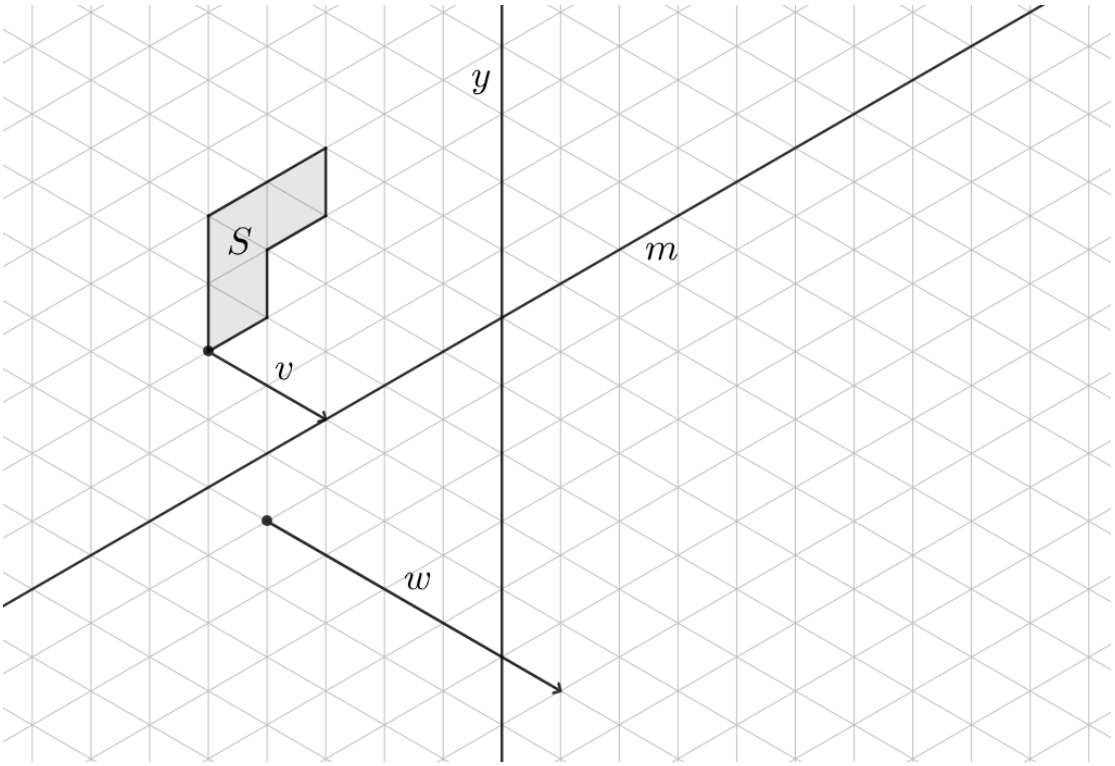


Explore

In your own words, what is the definition of a **translation**?

In your own words, what is the definition of a **reflection**?

Draw each rigid transformation in a different color.



A. Translate figure S along the line segment v in the direction shown by the arrow.

B. Reflect figure S across line y.

C. Reflect figure S across line m.

D. Translate figure S along the line segment w in the direction shown by the arrow.

E. Reflect the image from **D** across line y.

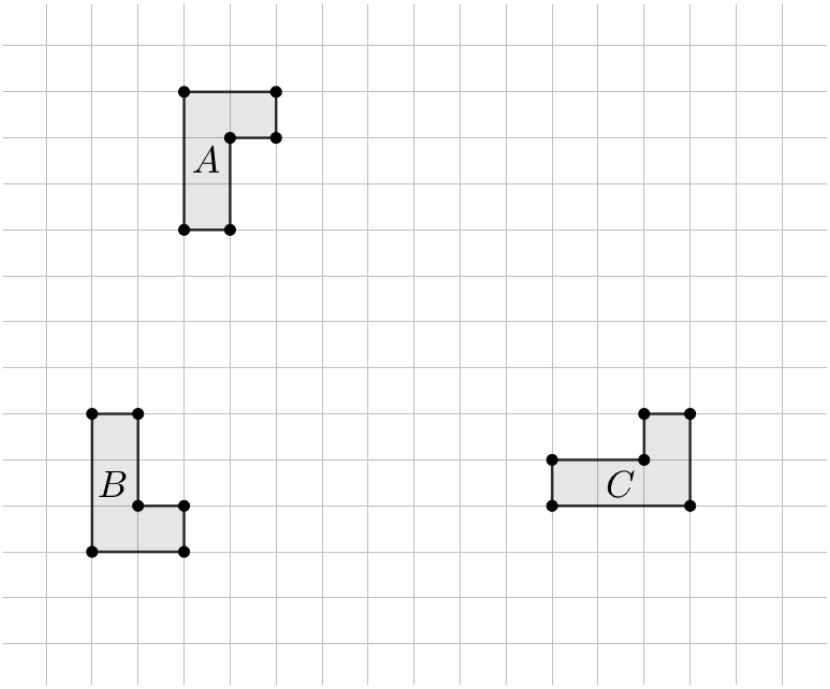
F. How are the images the same? How are they different?

Definitions

Rigid transformation: a translation, rotation, or reflection of a figure; sometimes used to refer to a sequence of transformations
Image: the new position of a figure after a transformation is applied
Congruent: two figures with the same shape and size; if there exists a rigid transformation that takes one figure onto another, then the two figures are congruent

Discuss

Here are 3 congruent L-shapes.



A. Describe a sequence of transformations that will take Figure A onto Figure B.

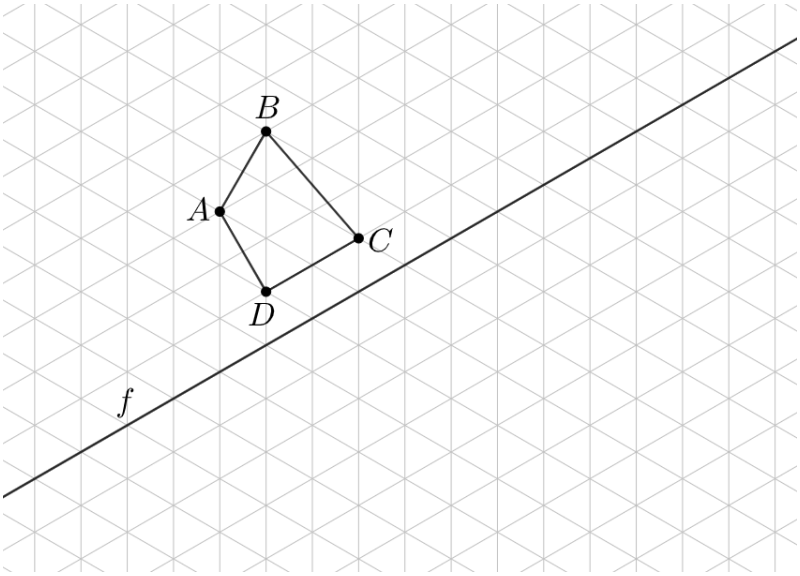
B. If you reverse the order of your sequence, will the reverse sequence still take A onto B?

C. Describe a sequence of transformations that will take Figure A onto Figure C.

D. If you reverse the order of your sequence, will the reverse sequence still take A onto C?

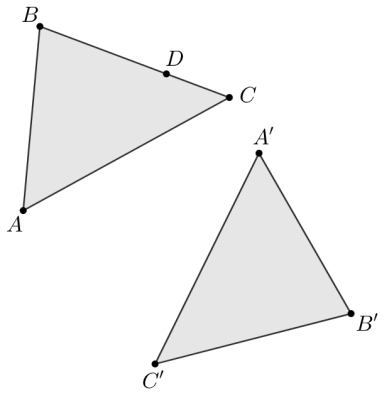
Demonstrate

Reflect quadrilateral $ABCD$ across line f.



Practice

1. There is a sequence of rigid transformations that takes A to A', B to B', and C to C'. The same sequence takes D to D'. Draw and label D'.



2. Which construction could be used to construct an isosceles triangle ΔABC given line segment $\overline{AB}$?

A. Mark a third point C not on segment $\overline{AB}$. Draw segments $\overline{AC}$ and $\overline{BC}$.

B. Label a point C on segment $\overline{AB}$ and construct a line perpendicular to $\overline{AB}$ through point C. Draw segments $\overline{AC}$ and $\overline{BC}$.

C. Construct the perpendicular bisector of segment $\overline{AB}$. Mark the intersection of this line and $\overline{AB}$ and label it C. Draw segments $\overline{AC}$ and $\overline{BC}$.

D. Construct the perpendicular bisector of segment $\overline{AB}$. Mark any point C on the perpendicular bisector except where it intersects $\overline{AB}$. Draw segments $\overline{AC}$ and $\overline{BC}$.

3. Select **all** true statements about regular polygons.

A. All angles are right angles

B. All angles are congruent

C. All side lengths are equal

D. There are exactly 4 sides

E. There are at least 3 sides

4. This straightedge and compass construction shows quadrilateral $ABCD$. Is $ABCD$ a rhombus? Explain how you know.