Name ____

Lesson 15: Rigid Motions - Reflections

LEARNING TARGET

I CAN construct the line of reflection of a figure (pre-image) and its image.

Warm Up

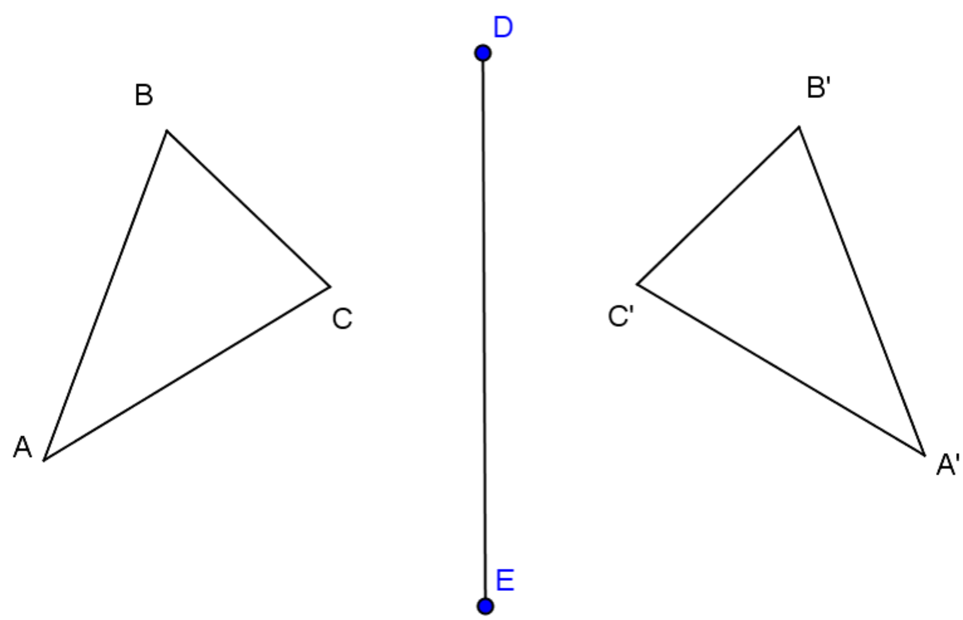
$\triangle ABC$ is reflected across DE and maps onto $\triangle A'B'C'$.

Use your compass and straightedge to construct the perpendicular bisector of each of the segments connecting A to A', B to B', and C to C'. What do you notice about these perpendicular bisectors?

Label the point at which $\overline{AA'}$ intersects DE as point O.

a. What is true about AO and $A'O$?

b. How do you know this is true?

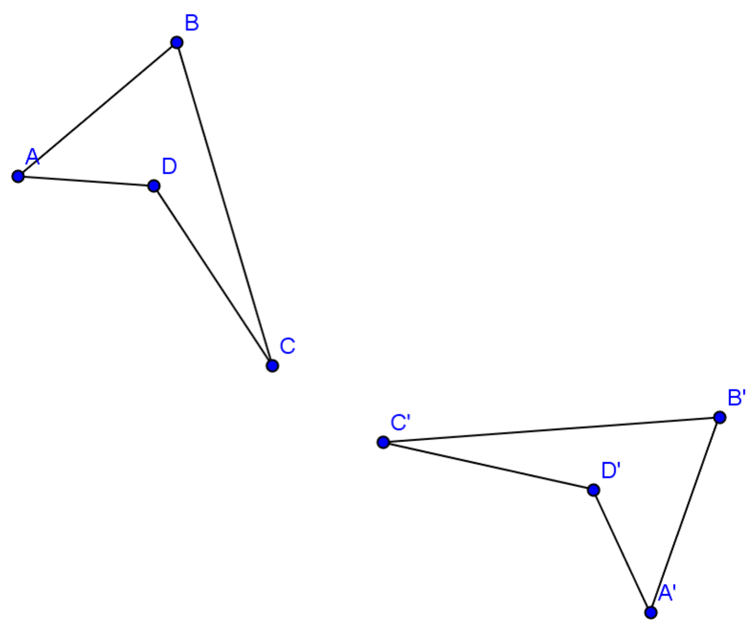


Mini Lesson

Example 1:

Construct the segment that represents the line of reflection for quadrilateral $ABCD$ and its image $A'B'C'D'$.

What is true about each point on $ABCD$ and its corresponding point on $A'B'C'D'$?



Definition:

Reflection: For a line l in the plane, a *reflection across* l is the transformation r_l of the plane defined as follows:

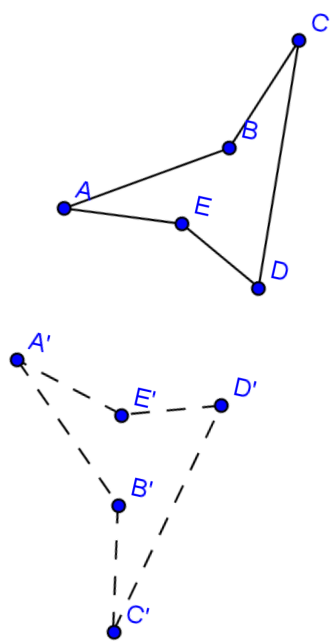
1. For any point P on the line l, $r_l(P) = P$, and
2. For any point P not on l, $r_l(P)$ is the point Q so that l is the perpendicular bisector of the segment PQ.

Work Time:

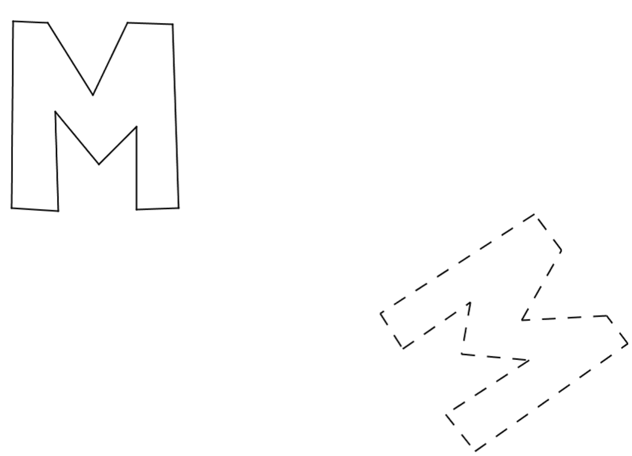
Examples 1–2

Construct the line of reflection across which each image below was reflected.

1.



2.

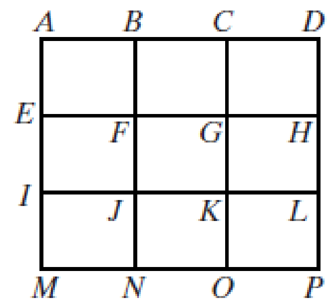


Name ____ Classwork/Homework

Lesson 15: Rigid Motions - Reflections

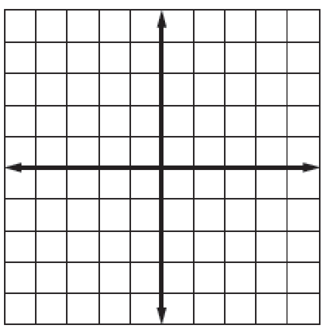
1. The diagram consists of nine congruent rectangles. Under a translation, the image of A is G. Find the image of each of the given points under the same translation.

a. J **b.** B **c.** I **d.** F **e.** E

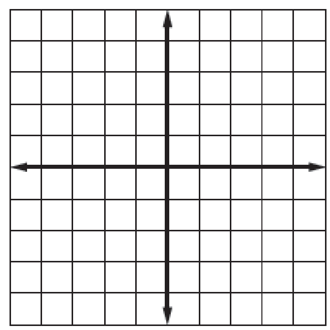


Graph each figure and its image after the specified rotation about the origin.

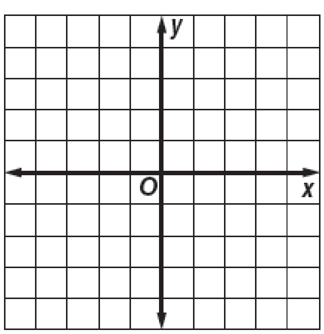
3. $\triangle STU$ has vertices $S(2, -1)$, $T(5, 1)$ and $U(3, 3)$; 90°



4. $\triangle DEF$ has vertices $D(-4, 3)$, $E(1, 2)$, and $F(-3, -3)$; 180°



5. quadrilateral $WXYZ$ has vertices $W(-1, 8)$, $X(0, 4)$, $Y(-2, 1)$ and $Z(-4, 3)$; 180°



6. trapezoid $ABCD$ has vertices $A(9, 0)$, $B(6, -7)$, $C(3, -7)$ and $D(0, 0)$; 270°