# Reflections in the Coordinate Grid

To reflect point P across line *l*, draw a line segment from point P that is perpendicular* to line *l*. Continue the line segment. The reflected point P' is at the same distance from line *l* as P, just on the other side.

In other words, in a reflection, each point and its image are at an equal distance from the line of reflection, measured along a line that is perpendicular to the line of reflection.
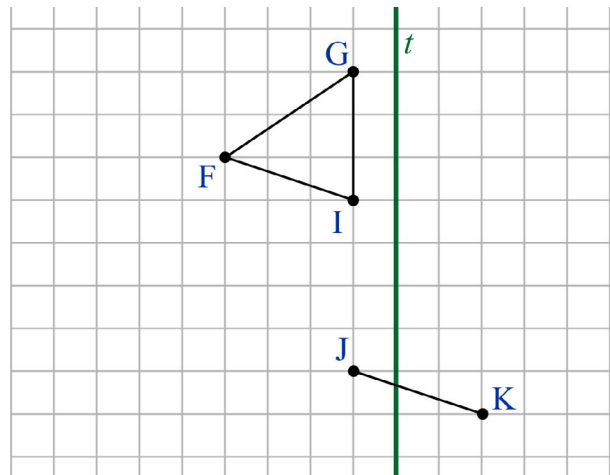
*Two lines or line segments are ***perpendicular*** if they meet at a right angle.
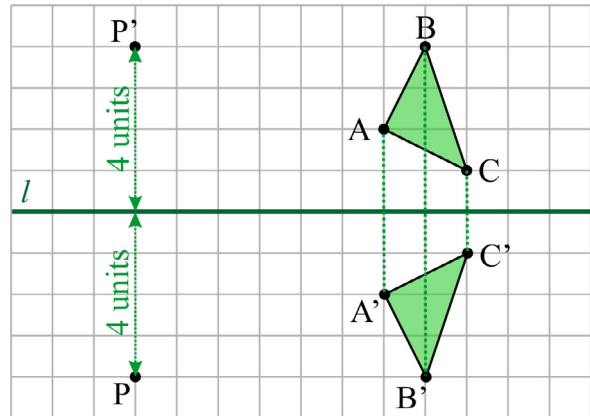
1. **a.** Reflect the points across line *s*.
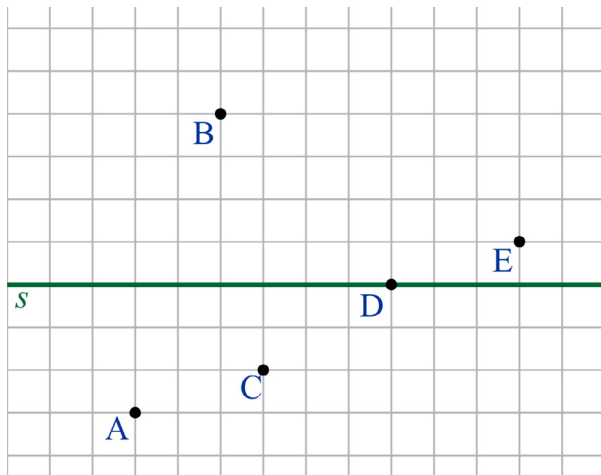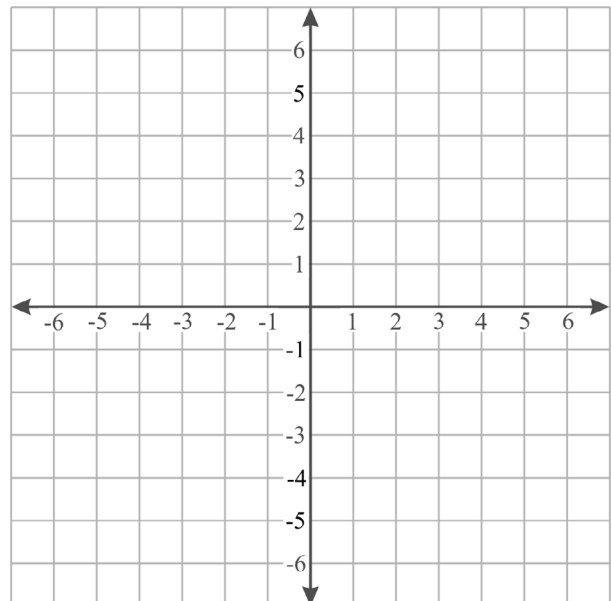
b. Reflect the figures across line *t*.

2. **a.** Draw a vertical line that passes through the point (2, 0).

b. Draw the points P(1, 2), R(3, 1), and Q(5, 4).

c. Reflect each point across the line. Label the reflected points as P', R', and Q'.

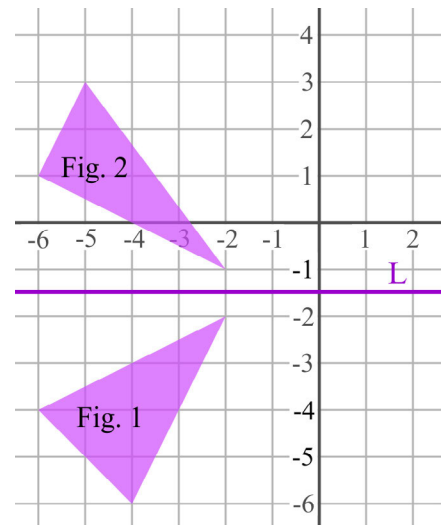**d.** Lastly, connect P, Q, and R to form a triangle, and also P', Q', and R'.

3. James says that figure 2 is congruent to figure 1 because it is a reflection of figure 1 across the horizontal line L.

   a. Explain why James's thinking is wrong.

   b. How would you fix the situation?

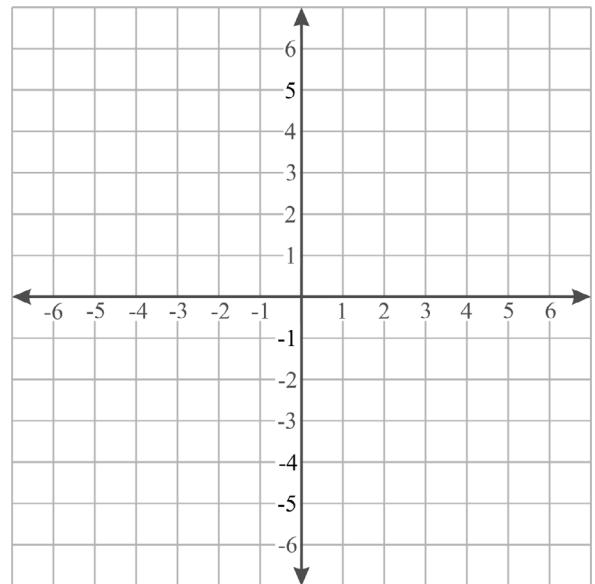4. Reflect the points listed below in the *x*-axis. Write down the coordinates of the reflected points:

   H (−2, 3) → H' (_____ , _____)

   I (1, −1)   →   I' (_____ , _____)

   J (3 , 5)   →   J' (_____ , _____)

   K (−5 , −4)   →   K' (_____ , _____)

   Compare the coordinates of each point and its image. What do you notice?

   What do you suppose happens to the coordinates of points that are reflected in the *y*-axis?

5. Pentagon MNOPQ with vertices at M(−3, 1), N(−1, 4), O(3, 4), P(5, 1), and Q(0, −1) is reflected across the *x*-axis. What are the coordinates of the vertices of the reflected figure?