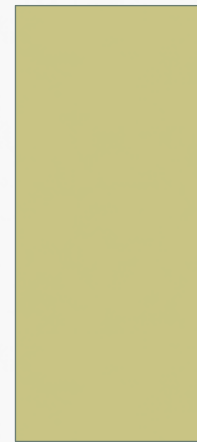


# GEOMETRY: UNIT 1: TRANSFORMATIONS

REFLECTIONS



# WARMUP

- Watch the Following Video:
- <http://www.pbslearningmedia.org/resource/muen-math-g-reflection/reflection/>

# REFLECTIONS

- **Objective**: Students will be able to do the following, regarding geometric transformations.
  - Write Transformations Symbolically and justify their choice.
  - Explain the movement of points for a given transformation.
  - Draw an image under each transformation.

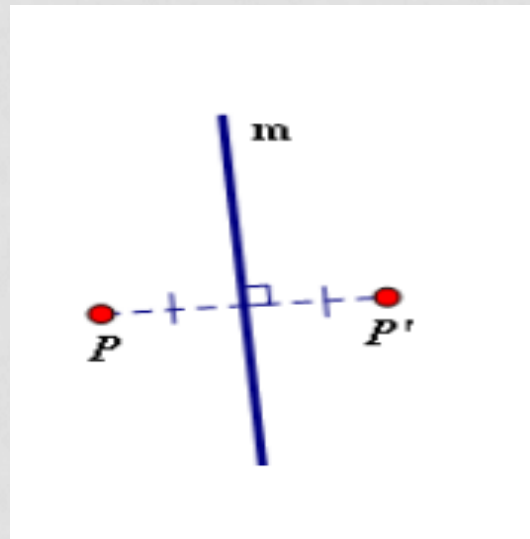
# ISOMETRY: A REMINDER

- An Isometric Transformation has the following properties are preserved:
  - Distance (All lengths stay the same)
  - Angle measure (All angles stay the same)
  - Parallelism (All lines that are parallel stay parallel)
  - Collinearity (All points on a line remain on a line)
- In short, the transformed figure (**Image**) is the same shape and size as the original figure (**Pre-Image**).

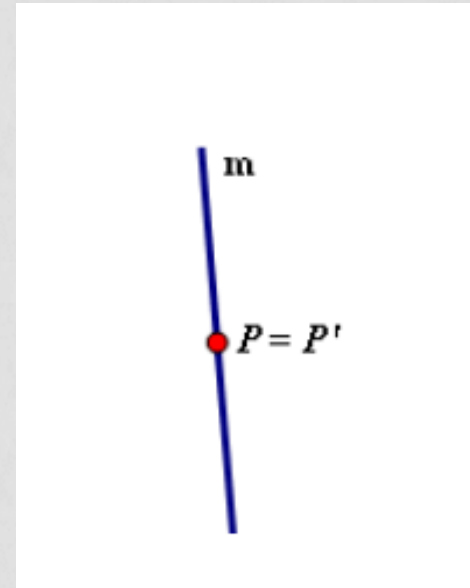
# REFLECTIONS

A **reflection** in a line  $m$  is an isometric transformation that maps a point  $P$  on the plane to a point  $P'$ , so that the following properties are true:

1. If  $P$  is not on the line  $m$ , then the line  $m$  is a perpendicular bisector of  $\overline{PP'}$ .

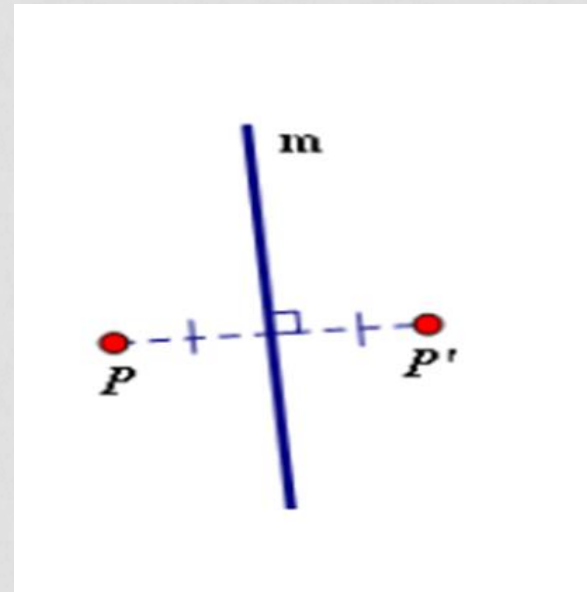


2. If  $P$  is on the line  $m$ , then  $P = P'$ .



# REFLECTIONS: NOTATION

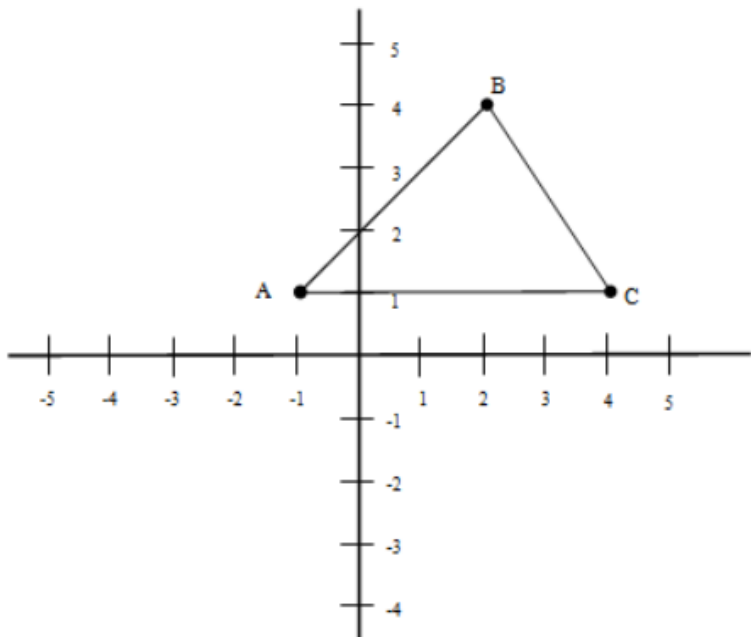
- To abbreviate a reflection in the line  $m$ , we write  $R_m$ . To abbreviate the statement  $R_m$  maps  $P$  to  $P'$ , we write  $R_m: P \rightarrow P'$  or  $R_m(P) = P'$ .



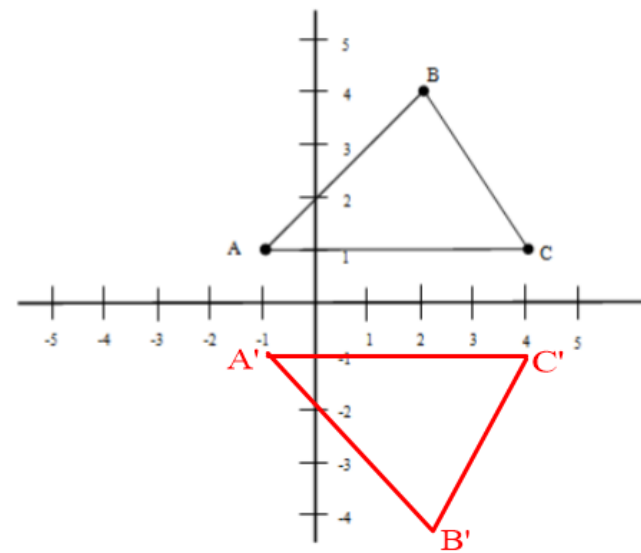
# REFLECTING POINTS

- Given  $\triangle ABC$  with  $A(-1, 1)$ ,  $B(2, 4)$ ,  $C(4, 1)$ , **reflect  $\triangle ABC$  through the  $x$ -axis.**

## Pre-Image



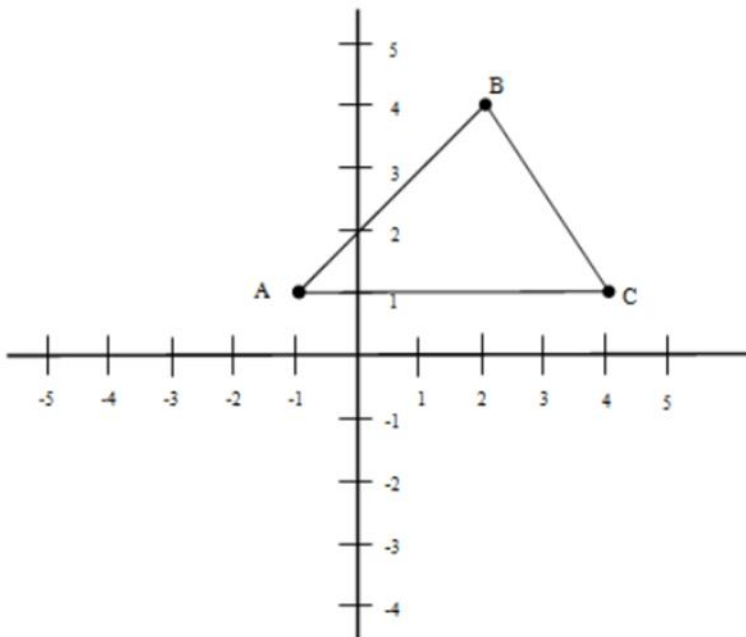
## Image



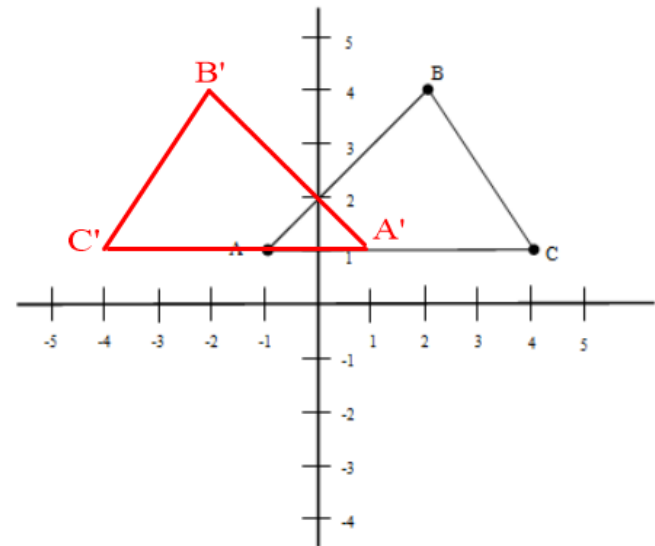
# REFLECTING POINTS ONCE MORE

- Given  $\triangle ABC$  with  $A(-1, 1)$ ,  $B(2, 4)$ ,  $C(4, 1)$ , **reflect  $\triangle ABC$  through the  $y$ -axis.**

## Pre-Image



## Image

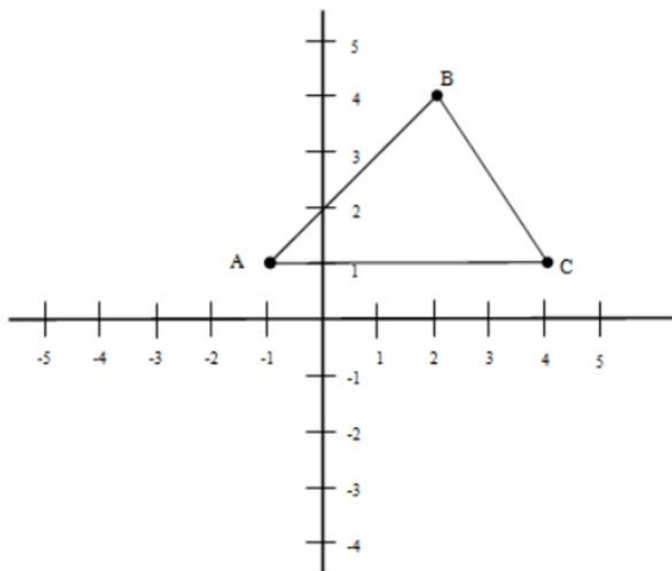




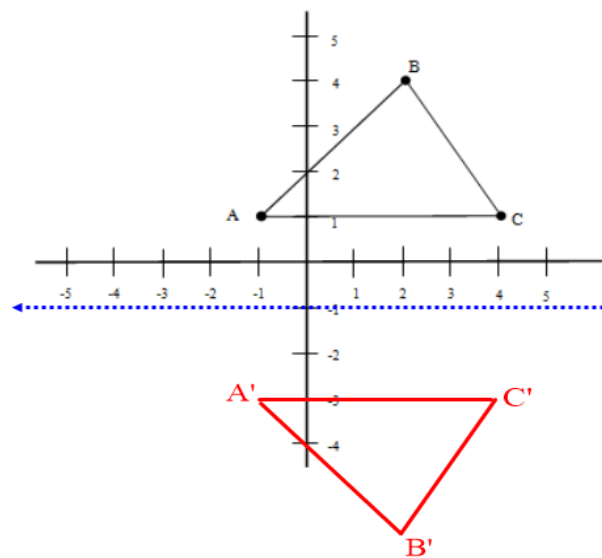
# REFLECTING POINTS FROM A LINE NOT ON AN AXIS

- Given  $\triangle ABC$  with  $A(-1, 1)$ ,  $B(2, 4)$ ,  $C(4, 1)$ , **reflect  $\triangle ABC$**  through the line  $y = -1$ .

## Pre-Image



## Image



# CLASSROOM ACTIVITY

- Go to page 579 of your textbook.
- Work through problems 1-14 of the “Classroom Exercises” section with your group.
- When you are done, explain in your own words what a reflection does to a point. Be brief, but not lazy (i.e. Don't say “It Reflects it”).