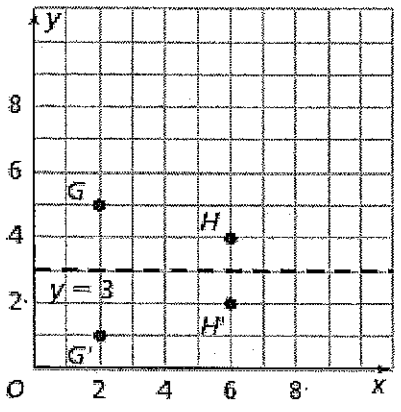Name: __Key__   Date: _____ Period: ____

Investigating Reflections

A **reflection** is a transformation that flips an image over a line called the **line of reflection.** Images shown in mirrors are reflections.

A. The reflection of two points across the line y=3 is shown. Point G′ is the reflection of point G. Point H′ is the reflection of point H.


1. What is the shortest distance from G to the line of reflection?

   2 units

2. Compare your answer to the distance from G′ to the line of reflection.

   They are both 2 units

3. Does this comparison hold true for H and H′?

   yes, H & H′ are equal in distance to line of reflection.

4. Using this information, write a general rule for reflecting a point across a line.
   Measure the distance from the point to the line of reflection. Move that same distance on the other side of the line & place your point.

B. The reflection of a triangle across the line x=4 is shown below.
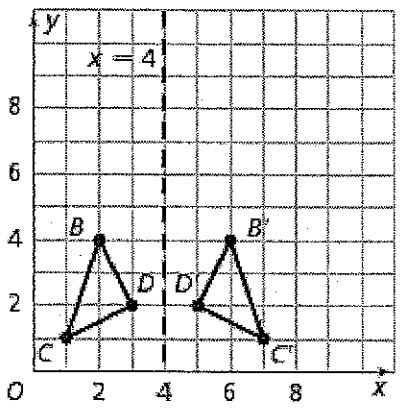
1. Imagine folding the graph over the line x=4. What would happen?
   The corresponding angles & sides would match up.

2. Measure the distance from each of the following.

   B and the line of reflection __2__

   B′ and the line of reflection __2__

   C and the line of reflection __3__

   C′ and the line of reflection __3__

   D and the line of reflection __1__

   D′ and the line of reflection __1__

3. Using a ruler, measure the corresponding sides of triangle BCD and B'C'D'. What do you notice about the lengths of the corresponding sides of the triangles?

They are Congruent.

4. Using an angle ruler, measure the corresponding angles. What do you notice?

They are Congruent.

5. Write a rule for the reflection of a polygon across a line.

Reflect each point by moving it the same distance on the other side of the line of reflection.

6. When **reflecting** a figure, what can you summarize about each of the following?

The corresponding angles are Congruent

The corresponding side lengths are Congruent

C. Reflect parallelogram ABCD, using the y axis as the reflection line, to form parallelogram A'B'C'D'.
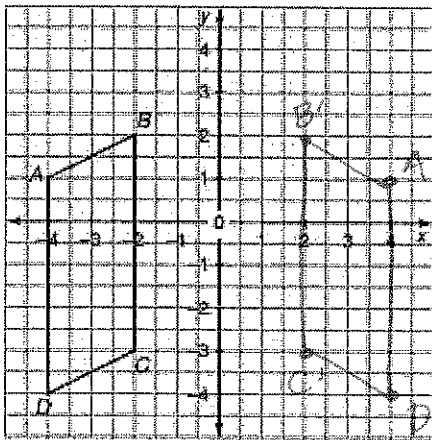
Pay attention to the intervals!

1. List the ordered pairs for the vertices of parallelogram ABCD and parallelogram A'B'C'D'.

A (-4,1)   A' (4, 1)
B (-2,2)   B' (2,2)
C (-2,-3)   C' (+2,-3)
D (-4,-4)   D' (+4,-4)

2. What do you notice about the ordered pairs of the vertices of the original image and its reflected image over the y-axis?

The y stays the same & x changes its sign.

D. A traingle has vertices at A(-4,3), B(1,5), C(2,-2).

1. If this triangle is reflected over the x-axis, what would the ordered pairs of the reflection's vertices be?

A'(-4,-3) B'(1,-5) C'(2,2)

2. If this triangle is reflected over the y-axis, what would the ordered pairs of the reflection's vertices be?

A'(4,3) B'(-1,5) C'(-2,-2)