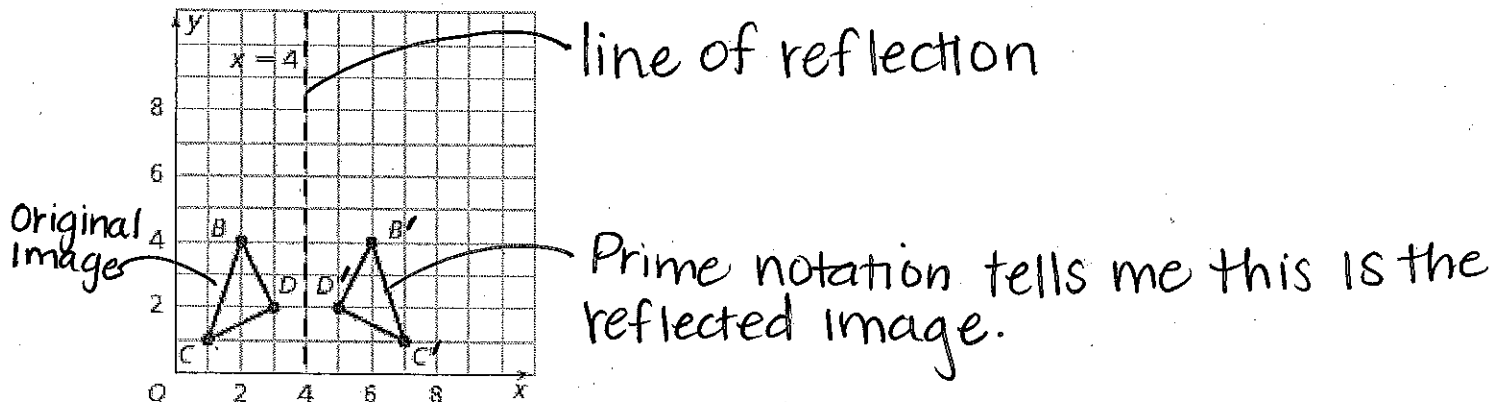Name: **Answers**   Date: _____ Period: ____

Investigating Reflections OL

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 a triangle across the line x=4 is shown below.

line of reflection

Original Image

Prime notation tells me this is the reflected image.

1. Imagine folding the graph over the line x=4. What would happen?

The two triangles would match up.

2. Measure the distance from each of the following.

B and the line of reflection __2 units__
B′ and the line of reflection __2 units__
C and the line of reflection __3 units__
C′ and the line of reflection __3 units__
D and the line of reflection __1 unit__
D′ and the line of reflection __1 unit__

B & B' are called corresponding points. They "match up" when folded.

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?

$\overline{BC} =$ __1.5__ cm $\overline{B'C'} =$ __1.5__ cm

$\overline{CD} =$ __1__ cm $\overline{C'D'} =$ __1__ cm

$\overline{BD} =$ __1__ cm $\overline{B'D'} =$ __1__ cm

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

$\angle B =$ __47__° $\angle B' =$ __47__°
$\angle C =$ __46__° $\angle C' =$ __46__°
$\angle D =$ __90__° $\angle D' =$ __90__°

It is OK if yours are a little more or less.

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

To reflect a polygon, reflect each point by counting units to the line of reflection. Measure the same distance on the other side & label the new point.

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

The corresponding angles _are equal / congruent_

The corresponding side lengths _are equal / congruent_

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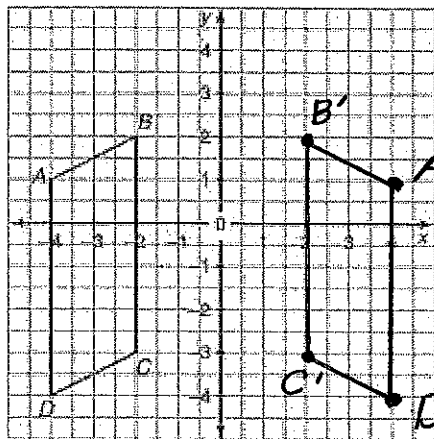
Pay attention to the intervals!

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)_

Think: What is the proper way to write a coordinate?

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 x changed sign & the y remained the same.

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

Keep x, change y

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)_

Keep y, change x

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)_

* If you read the question as reflecting the triangle after it had already been reflected over x,

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