**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**M8-U3: Notes #2 – Reflections Class: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

A **reflection** is a transformation which \_\_\_\_\_\_\_\_\_\_\_\_ the figure over a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

This line is called the .

**Example 1:**

*ΔABC* is being reflected over the *x*-axis.

Draw and label the image *ΔA’B’C*’.

We can use an arrow to describe this reflection.

Δ*ABC* 🡪 Δ*A’B’C’*

What are the coordinates of:

*A* \_\_\_\_\_\_\_\_ 🡪 *A’* \_\_\_\_\_\_\_\_\_

*B* \_\_\_\_\_\_\_\_ 🡪 *B’* \_\_\_\_\_\_\_\_\_

*C* \_\_\_\_\_\_\_\_ 🡪 *C’*\_\_\_\_\_\_\_\_\_\_

Write a general rule for an *x-*axis reflection:

(*x, y*) 🡪 ( \_\_\_\_\_\_\_\_ , \_\_\_\_\_\_\_ ).

Tell me more about this figure, is it congruent or similar? Explain how you know.

**Example 2:**

Δ*ABC* is reflected over the *y*-axis.

Draw the image Δ*A’B’C’*.

What are the coordinates of:

*A* \_\_\_\_\_\_\_\_ 🡪 *A’* \_\_\_\_\_\_\_\_\_

*B* \_\_\_\_\_\_\_\_ 🡪 *B’* \_\_\_\_\_\_\_\_\_

*C* \_\_\_\_\_\_\_\_ 🡪 *C’* \_\_\_\_\_\_\_\_\_\_

Write a general rule for a *y-*axis reflection:

(*x, y*) 🡪 ( \_\_\_\_\_\_\_\_ , \_\_\_\_\_\_\_ ).

**Example 3:**

a) Draw Δ*JKL* which has coordinates *J* (0,2), *K* (3,4), and *L* (5,1).

b) Draw the image Δ*J’K’L’* after a reflection of Δ*JKL* over the *x*-axis.

c) List the coordinates of *J’K’L’*.

 *J*  (0, 2) 🡪 *J’* \_\_\_\_\_\_\_\_\_

*K* (3, 4) 🡪 *K’* \_\_\_\_\_\_\_\_\_

*L* (5, 1) 🡪 *L’*\_\_\_\_\_\_\_\_\_\_

d) Draw the image Δ*J’’K’’L’’* after a reflection of Δ*J’K’L’* over the *y*-axis.

e) List the coordinates of *J’’K’’L’’*.

*J’*\_\_\_\_\_\_\_\_\_ 🡪 *J’’* \_\_\_\_\_\_\_\_\_

*K’*\_\_\_\_\_\_\_\_\_ 🡪 *K’’* \_\_\_\_\_\_\_\_\_

*L’*\_\_\_\_\_\_\_\_\_ 🡪 *L’’*\_\_\_\_\_\_\_\_\_\_

f) Describe a different combination of two reflections that would move Δ*JKL* to Δ*J’’K’’L’’.*

g) Is this new image congruent or similar to the original figure?

**Example 4:**

a) Draw Δ*ABC* which has coordinates *A*(0,1), *B*(3,4), and *C*(5,1).

b) Draw the image *ΔA’B’C’* after a reflection of

 Δ*ABC* over *x* = -1.

c) List the coordinates of *A’B’C’*.

 *A* (0, 1) 🡪 *A’* \_\_\_\_\_\_\_\_\_

*B* (3, 4) 🡪 *B’* \_\_\_\_\_\_\_\_\_

*C* (5, 1) 🡪 *C’*\_\_\_\_\_\_\_\_\_\_

**Example 5:**

a) Draw Δ*ABC* which has coordinates *A*(0,1), *B*(3,4), and *C*(5,1).

b) Draw the image *ΔA’B’C’* after a reflection of Δ*ABC* over *y* = -2.

c) List the coordinates of *A’B’C’*.

*A* (0, 1) 🡪 *A’* \_\_\_\_\_\_\_\_\_

*B* (3, 4) 🡪 *B’* \_\_\_\_\_\_\_\_\_

*C* (5, 1) 🡪 *C’*\_\_\_\_\_\_\_\_\_\_

**Example 6:**

Draw the line of reflection which caused rectangle *KLMN* to reflect onto rectangle *K’L’M’N’*. What is the equation of the line of reflection?

**Example 7:**

Draw the line of reflection which caused triangle *ABC* to reflect onto triangle *A’B’C’*. What is the equation of the line of reflection?

**Example 8:**

Quadrilateral *CDEF* is plotted on the grid below.

On the graph, draw the reflection of polygon *CDEF* over the *x-*axis. Label the image *C’D’E’F’*.

Now create polygon *C”D”E”F”* by translating polygon *C’D’E’F’* three units to the left and up two units. What will be the coordinates of point *C”*?

***Answer \_\_\_\_\_\_\_\_\_\_\_\_\_\_***

**Example 9:**

Describe how you could move shape 2 to exactly match shape 2’ by using one translation and one reflection.

