**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per.\_\_\_\_\_\_\_**

**U10 CWK #2** *Properties of Reflections*

1. In the grid below, has been **reflected** over the *y*-axis to obtain.
   1. Describe the movement of a figure that has been **reflected**.
2. In the table below, write the coordinates for the vertices of the pre-image and image.

|  |  |
| --- | --- |
| **Pre-Image** | **Image** |
| : | : |
| : | : |
| : | : |



1. Write a coordinate rule to describe this reflection.
2. Will this coordinate rule hold true for any figure reflected over the *y*-axis? Why or why not?

**Directions:** Draw and label the image of each figure for the reflection given. Then, answer the questions.

1. Reflect across the *x*-axis and label the image.
2. In the table below, write the coordinates for the vertices of the pre-image and image.

|  |  |
| --- | --- |
| **Pre-Image** | **Image** |
| : | : |
| : | : |
| : | : |

1. Write a coordinate rule to describe this reflection.

1. Will this coordinate rule hold true for any figure reflected over the *x*-axis? Why or why not?
2. Use questions #1 – 2 to explore some **properties of reflections**.
   1. Go back to problem #1. Draw a segment connecting B and B’, A and A’, and C and C’. Make at least two conjectures about the relationship between **the line of reflection and the segments connecting corresponding vertices** in the image and pre-image of a reflection.
   2. Do your conjectures hold true in problem #2?
   3. Go back to problem #1. For a *translation* we learned that corresponding segments are parallel (have the same slope). Is this property also true for reflections?
   4. Now, go to problem #2. Find the slopes of the following segments:

= = =

= = =

* 1. Compare the slopes of the corresponding segments of the image and pre-image. What do you notice about the slopes? How does this connect to the coordinate rule ?
  2. Examine problems #1 and #2. What do you notice about the **lengths of corresponding segments** in the image and pre-image?

1. Reflect across the line and label the image.



1. In the table below, write the coordinates for the vertices of the pre-image and image.

|  |  |
| --- | --- |
| **Pre-Image** | **Image** |
| : | : |
| : | : |
| : | : |
| : | : |

1. Write a coordinate rule to describe this reflection.
2. Reflect across the line and label the image.



1. Reflect over the *y*-axis and label the image.



1. Reflect across the line and label the image.
2. Describe the method you used to solve this problem.

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1. In the table below, write the coordinates for the vertices of the pre-image and image.

|  |  |
| --- | --- |
| **Pre-Image** | **Image** |
| : | : |
| : | : |
| : | : |

1. Write a coordinate rule to describe this reflection.
2. Will this coordinate rule hold true for any figure reflected over the

line ? Why or why not?

1. Find the slopes of the following segments:

= = =

= = =

1. Compare the slopes of the corresponding segments of the image and pre-image. What do you notice? How does this connect to the coordinate rule?
2. **Bonus:** What is the coordinate rule for a figure reflected across the line ?