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

Mr. Kaufman Geometry

**Superhero Symbol Project**

Every superhero needs a symbol. A symbol is a simple way to represent a character often without any letters or words at all. You are all superheros but you’ve been having a mental block when it comes to designing your symbol. Luckily, there’s a secret system to help new superheros create a symbol.

The coding system is shown below:

0 1 2 3 4 5 6 7 8 9 10

A B C D E F G H I J K

L M N O P Q R S T U V

W X Y Z

Follow Irene’s example with the class:

I R 1. Write your name first name vertically and end the first column with the first letter of

R E your first name.

E N

N E 2. The second column continues your first name starting with the second letter until the

E I columns are of equal length.

I R

I R → (8, 6) 3. Use the code above to form ordered pairs that represent your

R E → (6, 4) first name.

E N → (4, 2) 4. Use the same method to write, code, and form the ordered pairs

N E → (2, 4) that represent your last name.

E I → (4, 8)

I R → (8, 6)

5. Create your design.

1. Using graph paper, plot all of the ordered pairs, **in order**, first name then last name. **Connect the points with line segments in order as you go.**
2. Reflect all the points and line segments across the y-axis.
3. Reflect all the points and line segments across the x-axis.
4. Reflect the image created in part c. across the y-axis.(This is a reflection in the origin.)
5. Color your design and fill in spaces any way that you want to complete your symbol.

6. State **ALL** the coordinates of each reflection on a separate sheet of paper.

7. Answer the reflection questions on the back of this sheet.

On a sheet of looseleaf, answer the following questions.

1. What steps did you take to create your superhero symbol?
2. What shortcuts did you use, if any?
3. What do you think about the completed diagram? Is it what you expected?
4. How would you explain reflection across an axis or the origin to a non-math person?

Rubric:

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Category** | 4 | 3 | 2 | 1 |
| Neatness and Attractiveness | Exceptionally well designed, neat, and attractive. A ruler and graph paper or a computer graphing program are used. | Neat and relatively attractive. A ruler and graph paper are used to make the graph readable. | Lines are neatly drawn by the graph is plain without color. | Lines are crooked and graph paper is messy. |
| Concept | All transformations are performed correctly. | Transformations are performed correctly with one or two computational errors. | Numerous computational errors appear in the transformations. | Most computations are incorrect and represent a lack of understanding of reflections. |
| Creativity | Your design is colorful and clearly demonstrates thoughtfulness. | The design is mostly colored but is messy or only uses one color. | Very little effort was put into adding color. | No color is present at all. |
| Writing | All reflection questions are answered completely and clearly. | At least three reflection questions are answered. Some responses may be unclear. | At least two reflection questions are answered. Some responses are messy and unclear. | Most reflection questions are not answered. Writing is unclear and grammatically incorrect. |

Total Score: \_\_\_\_\_\_\_\_\_\_\_\_ out of 16

Comments and Suggestions: