Guided Notes (Model Notes)

# Vocabulary

* **Reflection:** a type of transformation that uses a *reflection line* like a mirror to create a mirror image; the figure is **flipped** over the *reflection line*

Is a reflection an example of rigid motion?

*yes, because the preimage and image are congruent*

# Special Reflections: Algebraic Rules

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | |  |  | |
| Reflected over… | Algebraic Rule |  | Reflected over… | Algebraic Rule |
| …the *x*-axis |  |  | …the *y*-axis |  |
|  |  |  |  |  |
|  | |  |  | |
| Reflected over… | Algebraic Rule |  | Reflected over… | Algebraic Rule |
| …the line *y* = *x* |  |  | …the line *y* = –*x* |  |

# Applying Algebraic Rules

**1)** Draw the image and complete the table below for the unshaded preimage.

| Graph | Verbal Description | Algebraic Rule |
| --- | --- | --- |
|  | The preimage is reflected over the line . |  |

# Other Reflections

**2)** What if we reflect an image over a different line?   
Reflect the following preimage over the line .

**3)** What if the preimage was not on the coordinate plane? How would we construct the image? Construct the image given the following preimage and line of reflection.

Shape

Description automatically generated

Guided Notes (Teacher Guide)

# Example 3

How to construct a reflection with a compass and straightedge.

| Construction | Instruction |
| --- | --- |
| A picture containing weapon, knife  Description automatically generated | **Step 1:** Set the compass to have a radius longer than the distance from  to the reflection line. You want to be able to sketch an arc that intersects the reflection line twice. |
| Shape, arrow  Description automatically generated | **Step 2:** Draw an arc with the center at  that intersects the reflection line twice. |
| Shape, arrow  Description automatically generated | **Step 3:** Use that same radius, from Step 1, to construct two additional arcs (both on the opposing side of the reflection line): each having their center at one of the intersection points from Step 2. |
| Shape, arrow  Description automatically generated | **Step 4:** Label this new point of intersection .  *Notice that if you draw a line from  to  that you have constructed a perpendicular line. There is no need to draw that line, but knowing this confirms that the reflection line is the perpendicular bisector of .* |
|  | **Step 5:** Repeat steps 2-4 for the remaining points. |
| Shape  Description automatically generated | **Step 6:** Use a straightedge to create the polygon (image). |