

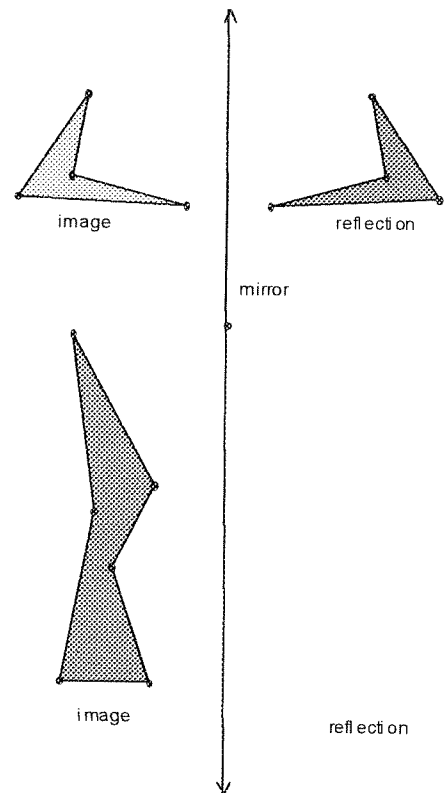
Transformations

Translations

Reflection: to reflect an object is to create a reverse image of it in relation to a line. In other words, we take an object and flip/reflect it over a given line, called the mirror.

For example:

Given the yellow quadrilateral, we can reflect it across the mirror (the blue line) and create the orange quadrilateral, called its image



Your turn:

Given the blue hexagon to the right, reflect it across the given mirror.

Let's explore rotation further. Open the Geometer's Sketchpad on your computer and follow the directions below.

1. Construct a scalene triangle:
 - (a) select the point icon on the left of the screen and create 3 points
 - (b) select all three points using the arrow tool (be sure they are highlighted) and go the **Construct** menu select **Segments**.
2. Create a separate line (this will be your mirror):
 - (a) click and hold on the segment icon on the left of the screen. Select the line instead of the segment
 - (b) click and drag on the sketch to create a line
3. Mark your mirror:
 - (a) select the line you just created
 - (b) go to the **transform** menu and select **mark mirror**
4. Reflect your triangle:

- (a) select all parts of the triangle
- (b) go the **transform** menu and select **reflect**

5. Label all points (if not already labeled):

- (a) select the letter icon (A) on the left
- (b) click on all points to create their label (notice that image points are labeled with ')

After manipulating the triangle for a few minutes, answer the questions below.

Reflection Questions...be as descriptive as possible.

1. How does the distance between an object and the mirror compare to the distance between the mirror and the object's image?

I think...

Actually...

2. What happens...

(a) to a point's image when the point is dragged toward the mirror?

I think...

Actually...

(b) when a segment is dragged away from the mirror?

I think...

Actually...

(c) when the original triangle is selected and dragged away from the mirror?

I think...

Actually...

3. The mirror...

(a) Select the mirror and drag it away from the original triangle. What happens to the distance between the mirror and the image?

I think...

Actually...

(b) How can you make the distance between the mirror and the image the same?



I think...

Actually...

(c) What is true if the mirror contains one vertex of the image triangle?

I think...

Actually...

4. Construct a segment between each vertex and its image. Select the three segments and make them dashed by selecting **Line width** → **Dashed** (in that order) from the **Display** menu. Explore what happens when the triangle is changed.

(a) What relationship exists between these segments?

I think...

Actually...

(b) What relationship exists between each segment and the mirror?

I think...

Actually...

(c) Do these relationships always exist? Even when an image is dragged across the mirror?

I think...

Actually...