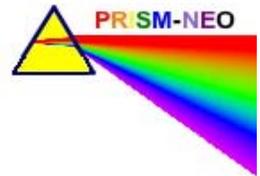


# Reflections

<---Sketch Title



**Sketch Filename:** Reflections.gsp

**Movie Filename:** reflect.mov

**Math Concept(s)**

**Suggested Grades**

**Sketchpad Level**

Transformations

7  
 8  
 9 Applied

Easy  
Easy

Beginner  
Intermediate  
Experienced

## Learning Goals:

- determine some of the properties of reflections

## “Sketchy” Description:

This 6 page sketch includes

- an activity with a pen and a stationary mirror; students are asked to connect the line segments which join 3 points to their images and make observations about these segments and the mirror
- an activity with a pen and a dynamic mirror; students are asked to connect the line segments which join 3 points to their images and make observations about these segments and the mirror
- an activity in which students discover if an unknown transformation is a reflection

## Lesson Plan Suggestions

- description of how the sketch might be used in each of the three lesson parts - *Minds On, Action!, Consolidate.*  
- includes student groupings, instructional strategies, and connections to manipulatives or other technologies.

### Minds On

Students work individually to write a journal entry "reflecting" on the different uses of the word reflection and how reflections are used in different contexts (for example architecture).

### Action

Students work with a partner to complete activities 1 to 3. Encourage students to look for a relationship between the segment (which joins a point to its image) and the mirror. Students should notice that the mirror is the perpendicular bisector of the segments.

### Consolidation

The practice activity “Reflections Ruminaton” allows student to find the reflection of a given triangle. They have the ability to show the segments. This will facilitate placing the image point so that the segment is perpendicular to the mirror as well being bisected by the mirror. Look for approximate images and not exact. If students are not ready to find the image of triangles which cross the mirror then instruct them to press “New Triangle” until they find an image which matches their level of readiness.

## Extensions:

There are two extension activities which tie reflections to coordinates. Both axes (x and y) of the Cartesian plane act as mirrors. Students are encouraged to look for a relationship between the coordinates of the image and the original point. Upon reflection in the y-axis the coordinates (x,y) become (-x,y). Upon reflection in the x-axis the coordinates (x,y) become (x,-y)

## Questions or activities for students/parents to explore together:

- 1, How is the distance from the point to the mirror related to the distance of the image from the mirror?
2. If a point is moved further from the mirror then will its image be moved closer to or further from the mirror?
3. If the mirror is rotated down (closer to horizontal) will the image point be rotated down or up?
3. If a point is reflected in the both the x -axis and y-axis then how will its coordinates be changed?