Activity 4: Reflections

PURPOSE
Explore reflections and their properties.

MATERIALS
A centimeter ruler, a Compass, and a Mira™

GROUPING
Work individually or in pairs.

GETTING STARTED
A Mira is a plastic drawing device that acts like a mirror. A Mira reflects objects, but since it is transparent, the image of an object reflected in it also appears behind the Mira.

The drawing edge of a Mira is beveled. When using a Mira, place it with the beveled edge down. Look directly through the Mira from the side with the beveled edge to locate the image of the object behind the Mira.

Place your Mira so that the image of circle $A$ fits on circle $B$. Hold the Mira steady with one hand and draw a line along the drawing edge.

Take away the Mira. The line you have drawn is called the Mira line. It represents the Mira. How does the Mira line appear to be related to points $A$ and $B$?
For each pair of figures below, use a Mira to fit the image of one of the figures onto the other. Then draw the Mira line.

1.

2.

3.

Use a Mira to draw the reflection of each figure through the given line.

1.

2.

3.

4.
Use a Mira to mark the location of the reflection of each point through the line $\ell$. Use prime notation to name each image point. For example, the image of point $D$ would be named $D'$.

Draw line segments $\overline{DD'}$, $\overline{OO'}$, and $\overline{GG'}$. Label the points where line $\ell$ intersects these segments $C$, $A$, and $T$, respectively.

1. What is the relationship between the line $\ell$ and the segments $\overline{DD'}$, $\overline{OO'}$, and $\overline{GG'}$?
2. Where is point $S$ located in relation to line $\ell$?
3. What is the relationship between the point $S$ and its reflection $S'$?

Use a compass and ruler to make the following constructions.

1. A line $\ell$ so that point $P$ is the reflection of point $A$ through $\ell$.

2. A line $\ell$ so that pentagon $R$ is the reflection of pentagon $S$ through $\ell$.

3. a. Explain how you constructed line $\ell$.

b. Why did you construct line $\ell$ as you did?