

## **Observation Activities**

Everyday when we look at something, we see through lenses that are a part of our eyes. To see clearly, we may need to wear eyeglasses, which have lenses. The magnifying glass is a familiar device employing a lens.

A lens is a transparent object, usually made of glass or plastic, with one or two curved surfaces. A lens bends the light going through it. It changes the direction that light moves in; this is called refraction.

A magnifying lens is a lens which makes small objects appear larger. Both sides of the lens are usually curved to form a double convex lens.

### **Introduction:**

The presenter holds up a magnifying glass and asks students what it is and who might use it. This leads to a discussion that all science starts with an observation that leads to a question. The presenter also brings up making analogies and forming hypothesizing or theorizing as important steps of the scientific process.

### **Magnifying with a Drop of Water:**

Students are given a piece of newsprint, a small sheet of wax paper, a cup of water, and a disposable pipette or dropper. Students are asked to place the wax paper on top of the newsprint and then to place a drop of water on the wax paper. The presenter asks the students how the water drop changes what they see and discusses the water drop as a simple lens.

The same procedure is used with a drop of glycerin, which magnifies to a slightly larger extent.

### **Magnifying with a Marble:**

The previous wax paper and water and exchanged for a glass marble. Students next explore how the newsprint appears through the glass marble.

### **Jewelers' Loupe:**

The presenter shows a jeweler's loupe and shows students how it can be used to free one's hands to write down and sketch while observing. Students spend time using the loupe to explore their thumbs, a penny, and a leaf from a dusty miller plant. They are asked to make analogies of "What does it look like?" and "What does it remind me of?"

### **Standards Met:**

**1.1.1, 1.1.2, 1.1.3, 1.1.4, 1.2.5, 1.2.7, 1.4.2, 1.5.3**

**2.1.1, 2.1.2, 2.1.3, 2.1.4, 2.1.6, 2.4.1, 2.4.6**

**3.1.2, 3.1.3, 3.1.4, 3.1.5, 3.2.4, 3.2.6, 3.5.5**

**4.1.3, 4.2.5, 4.4.1, 4.6.1**

**5.1.2, 5.1.3, 5.1.4, 5.2.4, 5.6.2**

**6.1.2, 6.1.3**

**7.1.1, 7.1.2, 7.1.3, 7.1.4, 7.4.1**

**8.1.1, 8.2.7, 8.5.6, 8.7.6**