

NAME: \_\_\_\_\_  
DATE: \_\_\_\_\_  
PERIOD/TEAM: \_\_\_\_\_

### Exploring Light Stations

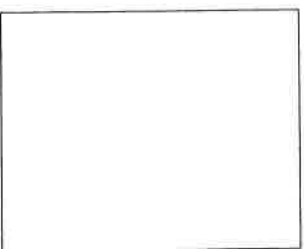
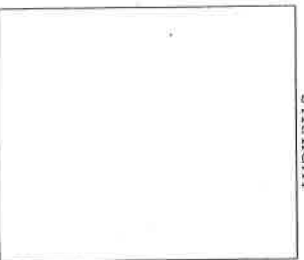
#### Part 1

**Purpose:** To explore refraction using water

**Materials:** Pencil, Beaker, Water

**Procedure:**

1. Fill the beaker 2/3rds full of water and take it to your group.
2. Place the pencil in the glass holding it straight up and down, not at an angle.
3. Sketch the pencil's appearance as it appears through the side of the beaker in the box below labeled "straight".
4. Place the pencil so that it leans against the side of the beaker at an angle. Now look through the side of the beaker and sketch the pencil as it appears in the box below labeled "angle".



5. You should have noticed that the pencil appears to be "broken" when viewed at an angle through the glass. Think about how waves of energy travel differently through solids, liquids, and gases in terms of their speed. Based on this fact, what do you think causes the pencil to look broken?

NAME: \_\_\_\_\_  
DATE: \_\_\_\_\_  
PERIOD/TEAM: \_\_\_\_\_

### Exploring Light Stations

#### Part 2

**Purpose:** To explore refraction using water.

**Materials:** Penny, Styrofoam bowl, water, beaker

**Procedure:**

1. Place the coin in the Styrofoam bowl.
2. Walk backwards until you can no longer see the coin.
3. Have a team mate add water to the bowl slowly until you can see the coin.
4. Light bends when changing from one medium to another depending on how fast it can move through each medium. Use this information to explain why you think you can see the coin after water is added to the bowl.

---

---

---

---

---

---

---

---

**Conclusions:**

What happens to a refracted wave?

---

---

---

---

---

---

---

---

NAME: \_\_\_\_\_  
DATE: \_\_\_\_\_  
PERIOD/TEAM: \_\_\_\_\_

## Exploring Light Stations

### Part C

**Purpose:** To explore how light interacts with concave and convex lenses.

**Materials:** Spoon

**Procedure:**

1. Hold up a spoon in front of your face with inside part facing you. This is like looking in a concave lens. Describe your appearance as you look at yourself in this side of the spoon.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_
2. Now turn the spoon over so that the back (or curved) surface is facing you. This is like looking in a convex lens. Describe your appearance as you look into this side of the spoon.  
\_\_\_\_\_  
\_\_\_\_\_
3. Can you think of any examples of places / people / objects / toys that use these types of lenses for a specific purpose? List as many as you can think of with your group. Make sure you put the purpose also. I have done an example for you:
  - a. Telescope – concave lens
  - b. \_\_\_\_\_
  - c. \_\_\_\_\_
  - d. \_\_\_\_\_