



## Curiosity Guide #203

### Refraction of Light

Accompanies Curious Crew, Season 2, Episode 3 (#203)

#### Ghostly Bowl

Investigation #1

#### Description

Now you see it; now you don't!

#### Materials

- Water
- Wesson oil or glycerin
- 2 Pyrex bowls or 2 Pyrex beakers, 1 large and 1 small
- Other glass items such as test tubes, clear marbles, and lenses

#### Procedure

- 1) Place the small bowl inside the larger one.
- 2) Ask viewers if they can see the small bowl.
- 3) Fill the small bowl with water. Confirm that the viewers can see the water and the bowl.
- 4) Continue filling the small bowl so that it overflows into the large one, until the liquid fully submerges the small bowl.
- 5) What do you notice about the small bowl? Can you still see it?
- 6) Repeat the experiment with oil or glycerin.
- 7) What do you notice?
- 8) Experiment with other glass objects. Are some objects harder to see than others?

## My Results

### Explanation

When an object is placed in the water, some of the light is still reflects off it, particularly at the edges. This reflection makes the object possible to see. However, when light travels from one medium to another, the light slows down. The light becomes bent or refracted.

The oil causes light to bend more than the water does. The oil and Pyrex glass have what is called a similar "index of refraction," which means that the oil bends the light a similar amount as the glass bowl. Because the oil and the Pyrex bend the light a similar amount, little light is reflected off the bowl, making it very difficult to see. The outline of the small, ghostly bowl may also appear magnified, due to the bending of the light that travels through the outside bowl.

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