

Light and Refraction

Name: _____ **Date:** _____

LEARNING OBJECTIVE

The student will observe and explain the refraction (bending) of light as it passes between mediums.

MATERIALS NEEDED

- a clear drinking glass
- water
- a pencil or straw
- paper
- pencil
- ruler

HANDS-ON ACTIVITY

1. Fill a clear glass about 3/4 full with water and place it on a table where you can view it from the side.
2. Place a pencil or straw into the glass at an angle so part of it is underwater and part is above the water, and observe it from the side at eye level.
3. Draw what you observe, showing how the pencil appears to bend or shift at the point where it enters the water.
4. Remove the pencil, look through the empty (dry) glass at an object behind it, then look through the water-filled glass at the same object and describe any differences you notice.
5. Write a short explanation (2-3 sentences) of why the pencil appears bent, using the word 'refraction.'

QUESTIONS

1. **Describe what happened to the appearance of the pencil where it entered the water.**

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2. **What causes light to bend (refract) when it passes from air into water?**

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3. **How did looking through the water-filled glass change the appearance of the object behind it, compared to the empty glass?**

4. Give one real-world example where refraction is important or noticeable.
