

# Teacher Notes: Jellaser

## Introduction

Light has many interesting aspects. **Refraction** is the way that light bends as it travels through different mediums. The **medium** is the substance that light is traveling through. If you are looking at the Moon while standing by a pool, the medium is air. If you are looking at the Moon from under water after you jump into the pool, the mediums are both air and water. The Moon would look differently from underwater because the light is refracted.

In this experiment you are going to see what happens when you shine a laser through different colors of Jell-O.

Be sure to prepare the Jell-O the night before. You will also need to keep the Jell-O cool through the day, either using a refrigerator or cooler with ice in your room.

If you want to leave the Jell-O in the dishes, you will have less of a mess. If you do this, you must use clear cups or dishes.

## Materials

- Laser pointer
- Strawberry Jell-O
- Blueberry Jell-O
- Toothpicks
- Binder clip
- Clear glass or plastic dishes

## Procedure

1. Make some red and some blue gelatin and mold it into the clear plastic or glass dishes and glasses. You can also experiment with different flavors of Jell-O. The Berry Blue® and Strawberry flavors work best. Students may eat the Jell-O at the end if you want.

## 2. DO NOT TASTE THE JELL-O!

### Materials

- Laser pointer
- Strawberry Jell-O
- Blueberry Jell-O
- Toothpicks
- Binder clip
- Clear glass or plastic dishes

### Procedure

1. Get a dish of blue Jell-O and a dish of red Jell-O from your teacher.

## 2. DO NOT TASTE THE JELL-O!

3. Turn the laser on. **Never look directly at the laser beam or allow it to shine in someone's eyes.** Use the binder clip to maintain the laser pointer in the ON position.

4. Shine the laser through the blue Jell-O. Record what happens in a Data Table. Have students use your preferred format for Data Tables.

5. Shine the laser through the red Jell-O. Record what happens in a Data Table.

6. Insert a toothpick in the red Jell-O in a slant.

7. Place the beam of the laser pointer on top of the toothpick (as if the toothpick is coming out of the laser pointer).

8. Look at the Jell-O from the top and side. Do the toothpick and laser beam coincide? Make a sketch in your notebook and record what happens.

## Questions

1. What happened when you shined the laser through the blue Jell-O?

*When you shined the laser beam through the blue Jell-O, you don't see anything.*

2. What happened when you shined the laser through the red Jell-O?

*When you shined the laser beam through the red Jell-O, you see the laser beam very clearly.*

3. Why was there a difference between the red and blue Jell-O?

*The Jell-O acts like a color filter. When you have a red laser beam and a red filter, the beam may be reflected and transmitted. The blue Jell-O does not reflect or transmit or refract anything that is red. Red and blue are complimentary colors.*

4. Did the laser beam and toothpick follow the same path? Explain.

*They did not. Jell-O is a different medium than air, so the light beam from the laser will behave differently in air and Jell-O.*

### Extension

Record the results if your glasses are lens-shaped (that is, one surface is close to spherical).

### Conclusion

What happens when you shine a laser through Jell-O? Use evidence from your lab to backup your claim.

*It depends on the color of the Jell-O. Blue Jell-O will filter out the red laser beam. Red Jell-O will show up clearly since it is not filtered out. The laser beam will also refract as it passes through the Jell-O.*