

Name \_\_\_\_\_

Date \_\_\_\_\_

## Optics

### Pre-Lab:

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### Lab Procedure:

#### *Materials:*

Cooking oil (about 400-500 mL)  
Tonic water  
Two beakers (one large and one small)  
Purple (405 nm) laser pointer

#### *Procedure:*

1. Fill one beaker with tonic water and the other with regular tap water.
2. Place the laser pointer flat on top of a book and position the laser so that it directly faces the wall. Be careful with the laser pointer, it should always remain **flat** and facing the wall!
3. With the laser pointer off, put the beaker with regular tap water between it and the wall. Then turn the laser pointer on and note the color of the light in the water on your worksheet.
4. Repeat step 3 for the tonic water.
5. Empty the water from both beakers.
6. Fill approximately half of the large beaker with cooking oil.

7. Now slowly dip the small beaker into the cooking oil until it is completely submerged. Note what happens to the small beaker on your worksheet!
8. If there is time remaining, try shining the purple laser through the oil and see what happens!

**Observations:**

**Conclusions**

1. Why did the small beaker disappear when placed in the cooking oil?
2. Why did the the purple laser behave differently in tap and tonic water?

**Bonus**

3. Why can we see the laser path in water but not in air?