

Grade 8 Science

Unit 2: Optics

Core Lab Activity 5-1D

**Follow That Refracted Ray!**

Name: \_\_\_\_\_

Section #: \_\_\_\_\_

Problem: Is there a pattern that describes the path of light during refraction?

Materials: ray box                      sheet of white paper                      transparent container  
                 ruler                              protractor                              water  
                 vegetable oil                      rubbing alcohol

Hypothesis: Which medium will the light ray refract the most? The least? (2 marks)

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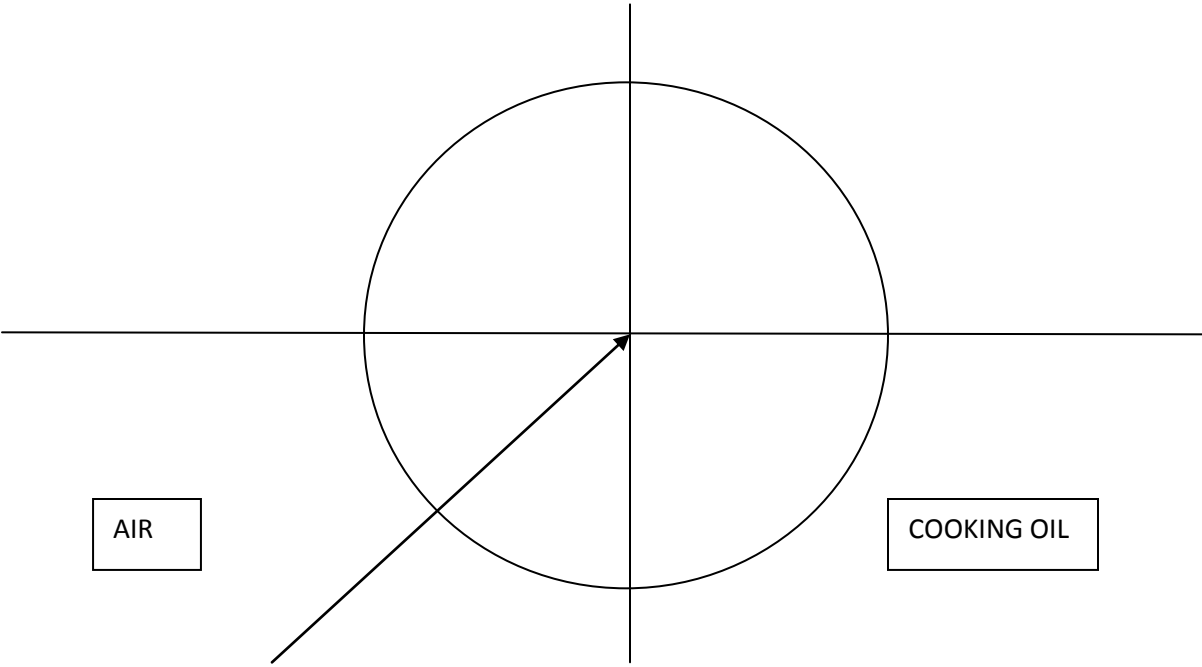
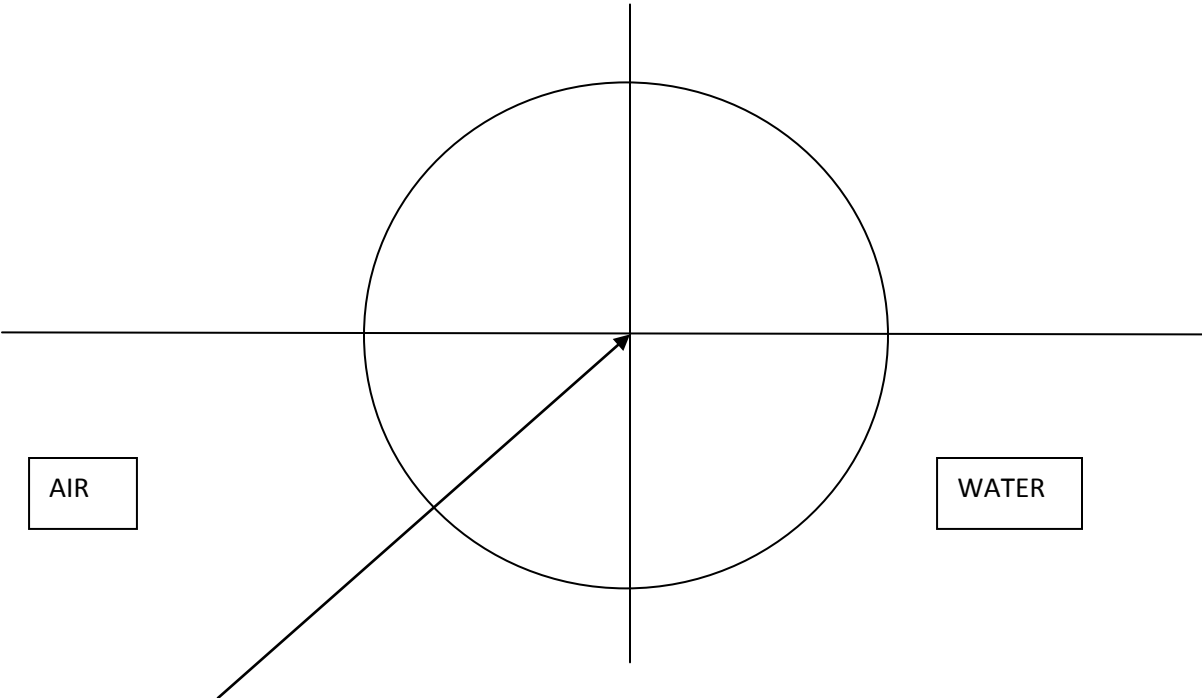
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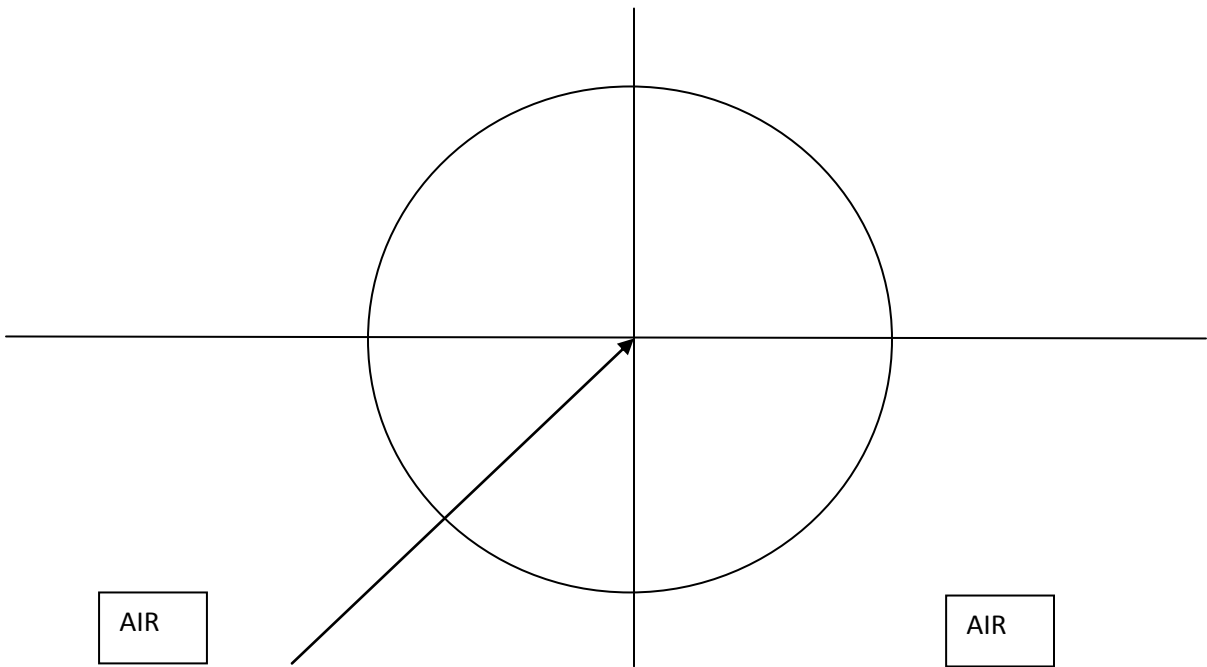
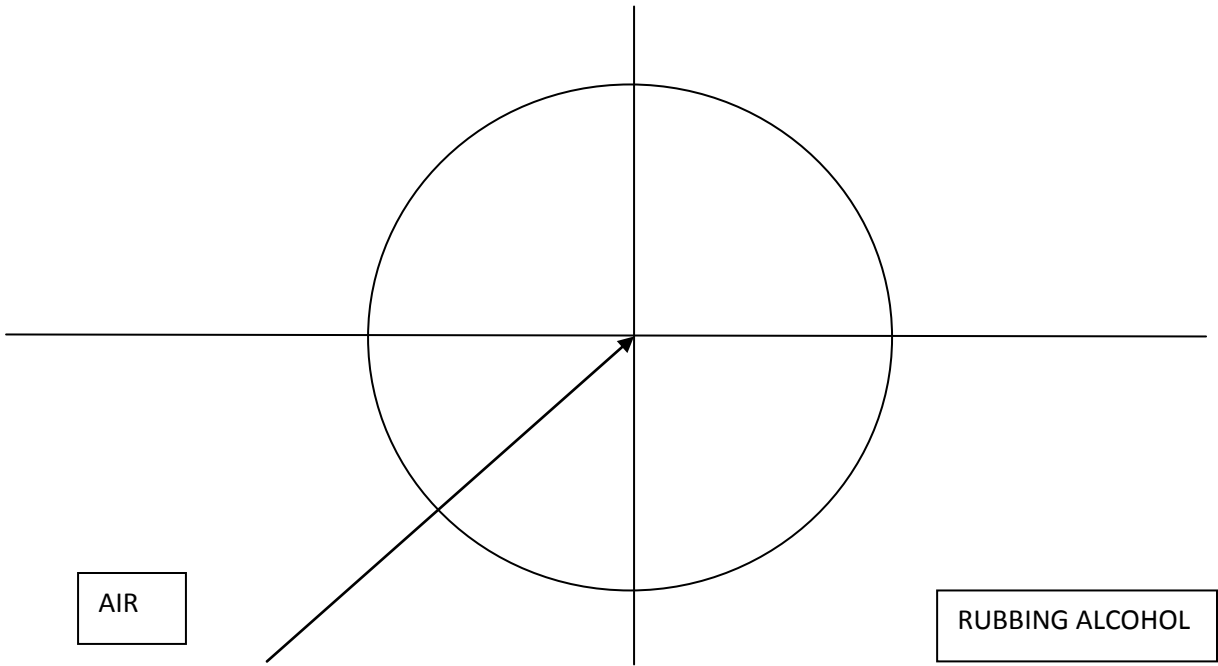
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Procedure:

1. Draw a straight line on your white paper.
2. Put 10mL of water into a transparent container.
3. Place the container on the line so that the container is in the middle of the line.
4. Using your ray box, shine the light ray, so that it hits the normal, through the container. (Use the incident ray already on the diagram.)
5. Mark both the incident ray and the refracted ray.
6. Measure both the angles of incidence and refraction. Place these measurements on your diagram.
7. Repeat the steps 2-6 for both cooking oil and rubbing alcohol.
8. Repeat steps 3-6 for air.

Observations: (24 marks)





Questions:

1. Does light bend toward or away from the normal when it travels from air into another medium such as water? Did your results support your hypothesis? Explain. (3 marks)

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2. Increase the angle of incidence. What happens to the angle of refraction? (2 marks)

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3. What happens to the size of the angle of refraction when a liquid other than water is used and the angle of incidence is the same? (2 marks)

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4. Do the light rays move toward or away from the normal when they travel from a medium such as air into water? Explain why you think this would happen. (3 marks)

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5. Is there an angle of incidence for which there is no change in the direction of the light? Test your thoughts. Draw a diagram for this situation. (3 marks)

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