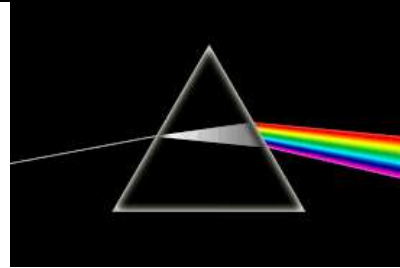


# Iona Prep Physics

## Index of refraction and a dispersive medium

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Go to:

[https://phet.colorado.edu/sims/html/bending-light/latest/bending-light\\_en.html](https://phet.colorado.edu/sims/html/bending-light/latest/bending-light_en.html)

Click on More tools

You see a laser (Cylinder with large red dot which is the on/off switch).

Turn the laser on and you will see red light in air striking the air/glass interface at an angle.

Copy this diagram. Label the angle of incidence, the angle of reflection, and the angle of refraction.

Click the small box labeled Angles, and the number of degrees in each angle will be displayed.

You can click on and drag the laser to change the angles. Repeat the experiment for 6 different angles of incidence and fill in the chart below.

Hint: When doing calculations be sure your calculator is in degrees, not radians.

| Angle of incidence ( $\theta_i$ ) | Angle of refraction ( $\theta_r$ ) | Ratio A $\theta_i/\theta_r$ | $\sin \theta_i$ | $\sin \theta_r$ | Ratio B $\sin \theta_i / \sin \theta_r$ |
|-----------------------------------|------------------------------------|-----------------------------|-----------------|-----------------|-----------------------------------------|
|                                   |                                    |                             |                 |                 |                                         |
|                                   |                                    |                             |                 |                 |                                         |
|                                   |                                    |                             |                 |                 |                                         |
|                                   |                                    |                             |                 |                 |                                         |
|                                   |                                    |                             |                 |                 |                                         |

Of the following columns, which appears to be the most constant? Ratio A or Ratio B?

Set  $\theta_i$  at about 60 degrees and vary the color of the light. Start at violet 380 nm and go up to red at about 700 nm and answer the following question:

The angle of incidence remained constant. What happened to the angle of refraction? It increased / decreased / remained the same.

Your teacher will tell you how to write up this lab.