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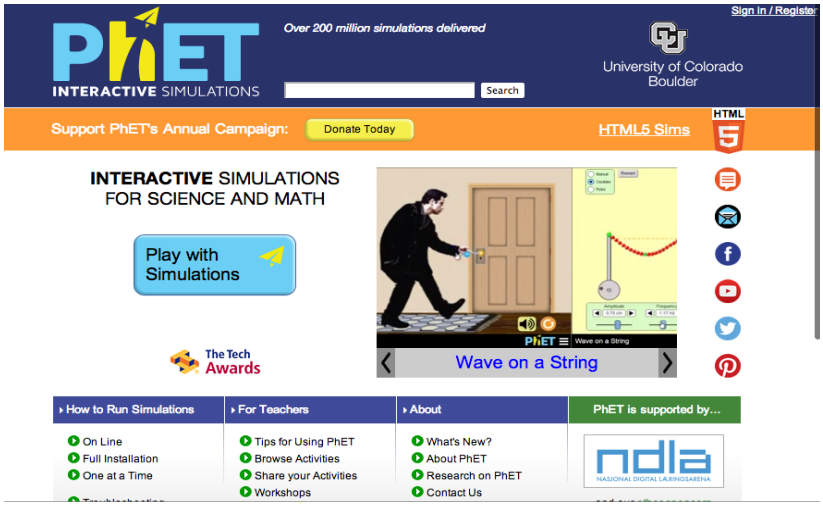
Title: Refraction of Light

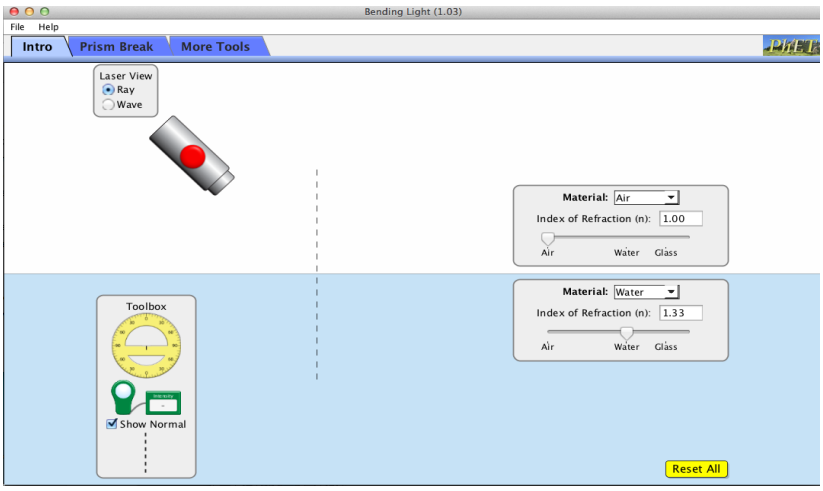
Introductions

In this activity you will investigate how light travels in straight lines except when it reaches a boundary between different mediums. At the boundary, light both bounces off and passes through the surface, changing direction.

1. Click this link: http://phet.colorado.edu/
This is a screen shot of the website:



2. Click the “Play with sims” button.
3. Click “New Sims” -> Click “Bending Light”->Click “Run Now!”
4. Then this screen appears:
    - The vertical line of where the light ray hits is called the Tangent. Its perpendicular to the interface of the two mediums.



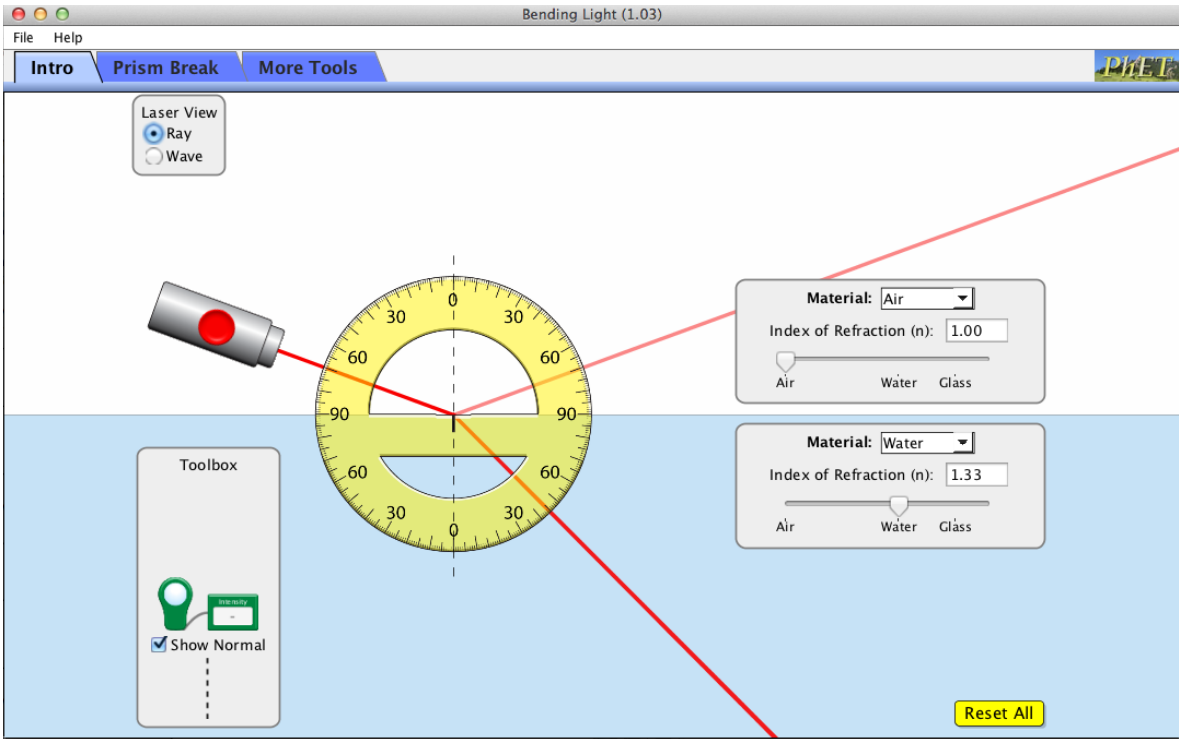
Exploration Phase

1. Click the "Intro" tab on the sim
2. Click on the Bending Light; view it in ray and wave laser view.
3. Explore the position of the light from different angles.
4. Freely explore the objects in the "Toolbox."

Explanation Phase

Aim: How are the reflection and refraction of light color related to one another?

- Select the INTRO tab.
- Click the RESET ALL button on the bottom right.
- At the top select laser view – RAY
- Push the red button on the laser pointer to get a beam of light
- Use the Protractor to set the light at a 70 degrees angle.
- This is how it should look like:



- Then change the laser view to WAVE in order to get a better perspective for the following inquiring.

1. Draw what happens to the light ray when it travels through AIR then into WATER. Does the light bend towards from the tangent or away from it?

Air	Describe the behavior of the ray. (Think about the thickness, the direction and the brightness of the light.)
Water	

2. Draw what happens to the light ray when above and below the line are both water. Does the light bend towards from the tangent or away from it?

Water	Describe the behavior of the ray. (Think about the thickness, the direction and the brightness of the light.)
Water	

3. Draw what happens to the light ray when above and below the line are both Air. Does the light bend towards from the tangent or away from it?

Air	Describe the behavior of the ray. (Think about the thickness, the direction and the brightness of the light.)
Air	

Application Phase

4. Change the top material to Air and the bottom material to Mystery A. Draw what happens to the light ray. Do you think Mystery A could be Air? Why or Why not?

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Air	Describe the behavior of the ray. (Think about the thickness, the direction and the brightness of the light.)
Mystery A	

5. Draw what happens when the light travels from Mystery A into Mystery B. Use the protractor in the toolbox to measure the angle of the reflection. _____

Mystery A	Describe the behavior of the ray. (Think about the thickness, the direction and the brightness of the light.)
Mystery B	

Conclusion: Compare the results from your drawings and explain you observations.