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Activities

Making Rainbows

Name: _____ Date: _____

One sunny day in England in 1665, Isaac Newton had some fun making rainbows with a prism. In this Planet Diary activity, you'll do the same with a virtual prism.

Directions

- Begin with a look at Newton's Prism Experiments. Read the introduction. Then drag the prism on the right upwards so it's out of the light path. Look at the refracted colors of light passing through the prism on the left. Answer Workspace question 1.
- Drag the prism on the right towards the beam of light until the point of the triangle extends below the violet end of the spectrum. Observe what happens to the beam of light. Answer question 2.
- Go to Refraction of Light. Select *Monochromatic* from the light source choices below the animation. Slide the Wavelength lever to see the wavelengths of the different colors of light. After trying all the colors of the rainbow, answer question 3.
- What happens when light is refracted through different materials? Set the light source to *White Light*. Set the Incident Angle slider to 45 degrees. Experiment with air, water, ice, glass, diamond, and lead sulfide from the Materials menu to see how they refract light. Notice the angle gets smaller as the amount of refraction increases. (Can you see why?) Record the angle of refraction of each material you test in the table for question 4.
- When you're done, answer questions 5 and 6.

Workspace

1. What color of light is refracted the most by the prism? The least?

2. What happens to the beam of light after passing through both prisms? Form a hypothesis explaining this result.

3. Describe the relationship between wavelength (color of light) and the amount it is refracted.

4.

Material	**Angle of Refraction**
Air	
Ice	
Water	
Crown Glass	
Diamond	
Lead Sulfide	

5. Of the materials you tested, which refracts light the most? The least?

6. If you look at a straw in a glass of water, it appears to bend. Explain why in terms of refraction.

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