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Activities

Fun With Polarized Light

Name: _____ Date: _____

Polarized sunglasses reduce glare so you don't have to squint on a sunny day. You'll find out all about polarized light in this Planet Diary activity.

Directions

- Start at Catch the Wave from Physics 2000. View the animation, then go to Polarizing Filters. Read the intro, then scroll to the interactive *Polarizing Filter*. Click and drag the lens to turn it. Click outside the lens to move it to different parts of the water or sky. Answer Workspace question 1.
- Experiment at Blocking Light. Scroll to the interactive window. Turn the switches to the off position so only one lens remains in the light path. Rotate the lens by clicking and dragging it from the 12 o'clock (up and down) position. Notice the arrow showing the direction of the rays. Observe how the image of the lightbulb changes as you rotate the lens. Answer question 2.
- Return the lens to 12 o'clock position. Switch one of the other lenses back on by clicking its green side. Turn it 90° way to the 3 or 9 o'clock position. What happens to the direction of rays? How does the image of the bulb change? Answer question 3.
- Now turn the second lens to the 6 o'clock (straight up and down) position. Observe what happens, then answer question 4.
- For a closer look at polarized light, go to Polarization. Look at the rotating arrows for polarized and non-polarized rays. Then answer question 5.
- Scroll to the diagram of polarizing filters. Read the explanation, then answer the last question.

Workspace

1. What happens when you turn the lens?

2. What happens to the direction of the light ray and the image of the bulb when you turn the single lens?

3. What happens to the light direction and the image of the bulb when the second lens is turned 90° to the 3 or 9 o'clock position? Explain why this happens.

4. What happens to the light direction and the image of the bulb when the second lens is turned to the 6 o'clock (180°) position? Why?

5. How are the arrows showing polarized and non-polarized light rays different?

6. What does a polarizing filter do to the electromagnetic waves of light passing through it?

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