

In this activity, you will qualitatively examine how the intensity of light changes as it becomes polarized. You will also test various sunglasses to determine if the lenses are polarized.

**Materials:**

- polarization filters (2)
- sunglasses (several pairs)
- light source

**Part One**

1. Hold a polarization filter between your eye and the light source. What do you observe about the intensity of the light seen directly versus the light seen through the filter?

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2. Add a second filter and rotate it until the light appears to be of the same intensity as through just one filter. Draw a diagram of these two filters stacked on top of each other.

3. Now rotate the filter until the light intensity appears to be half of what it is through one filter. To what angle did you rotate the second filter to reach this intensity?

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4. Draw a diagram of these two filters stacked on top of each other.

5. Use the intensity of light equation to calculate the correct angle for the intensity to be half of what it is through one filter.

6. Rotate the second filter until no light passes through it. At what angle are the two filters relative to each other in order for this to happen?

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7. Draw a diagram of these two filters stacked on top of each other.

8. Use the intensity of light equation to calculate the correct angle for the intensity to be reduced to zero through the second filter.

## Part Two

1. Using a polarization filter, determine which, if any, of the sunglasses lenses are polarized. Detail your procedure and tabulate your data and findings.

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