

In this activity, you will be qualitatively examining how the intensity of light changes as it becomes polarized. Additionally, you will be testing various sunglasses to determine if the lenses are polarized.

Materials:

- two polarization filters
- several pairs of sunglasses
- light source

Part One

1. Hold a polarization filter between your eye and the light source. What do you notice about the intensity of the light seen with the filter compared to without?

2. Now, add a second filter, and rotate the filter through so that the intensity does not change from what it was with one filter. Draw a diagram of these two filters stacked on top of one another.

3. Rotate the filter so that, in your estimation, the intensity is roughly half of what it was through one filter. What angle did you rotate the second filter to attain this intensity?

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

5. Use the intensity of light equation to calculate what the angle should be in order for the intensity to be halved from what it was through one filter.
6. Now, rotate the second filter so that no light passes through the second filter. At what angle are the two filters relative to each other in order for this to happen?

7. Draw a diagram of these two filters stacked on top of each other.
8. Use the intensity of light equation to calculate what the angle should be in order 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 sunglass lenses are polarized. Write, in detail, your procedure and tabulate your data and findings.
