# Ray Optics

## Notes:

- **Light:** is a combination of perpendicularly oscillating electric and magnetic fields.

- **For Reflection:** incident angle = resulting angle.

- **Refraction:** due to a change in speed of the ray, causes a change in direction - different surfaces have different indexes of refraction (see the law of refraction for an equation).

- **Dispersion:** when different wavelengths of light travelling together refract to a different degree due to the refractive index. Shorter wavelengths experience more significant refraction.

- **Total Internal Reflection:** when light travels from a higher refractive index to a lower one (critical angle).

- **Fiber Optic Cable:** Light Entering at the correct angle bounces along the core without escaping -> If the light enters below the **acceptance angle**, light gets guided by internal reflection. If above, the light escapes.

## Demo:

- An arduino programmed to send binary characters at set intervals, causing light to flash through the fiber optic cable, to be received by a solar panel (light sensor), and decoded by a second arduino.