1. It is often estimated that light will travel one foot in one nanosecond (ns). Modern lasers can create a light pulse that lasts only a few femtoseconds (fs)!
   1. How far, in meters and in feet, will light actually travel in exactly 1 ns?
   2. What is the length of the light pulse created in 6.0 fs?
   3. How many wavelengths of red light (wavelength = 700. nm) are included in such a pulse?
2. A low frequency electromagnetic wave has a frequency of 10 Hz.
   1. What is the wavelength of the wave with a frequency of 10 Hz?
   2. If blue light has a wavelength of 400 nm, how does its frequency compare to red light? Which one has more energy?
3. H.G. Wells wrote a famous novel about a man who made himself invisible by changing his index of refraction. What would his index of refraction have to be to accomplish this? Would the invisible man be able to see anything?
4. Sunlight passes into a raindrop at an angle of 22.5° from the normal at one point on the droplet. What is the angle of refraction?
5. A ray of light traveling through air is incident upon a sheet of pure crown glass at an angle of 30.0°.
   1. What is the angle of refraction?
   2. A ray of light is incident upon a diamond at 45.0°. What is the angle of refraction?
   3. Does crown glass or diamond bend light more?
6. Fill in the blanks: Magenta ink absorbs \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ light and reflects \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ and \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ light.
7. What color would a yellow pepper look like under the following colors of light? Explain WHY.
   1. Red Light
   2. Green Light
   3. Blue Light
   4. Yellow Light
   5. Cyan Light
   6. Magenta Light
8. It is often estimated that light will travel one foot in one nanosecond (ns). Modern lasers can create a light pulse that lasts only a few femtoseconds (fs)!
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