

Name \_\_\_\_\_

**Electromagnetism Worksheet #1**  
**Frequency, Wavelength & The Speed of Light**

1. What is meant by the "frequency of light"? What symbol is used for it, and what is the SI unit for frequency?
2. Sketch a diagram of a wave and label its wavelength and its amplitude.
3. Give the equation that relates the wavelength and frequency of a light wave to the speed of light.
4. What is the frequency in hertz of blue light having a wavelength of 425 nm? (nano =  $1 \times 10^{-9}$ )
5. Ozone protects the earth's inhabitants from the harmful effects of ultraviolet light arriving from the sun. This shielding is a maximum for UV light having a wavelength of 295 nm. What is the frequency in hertz of this particular wavelength of UV light?
6. Radar signals are also part of the electromagnetic spectrum in the microwave region. A typical radar signal has a wavelength of 3.19 cm. What is the frequency in hertz?
7. FM radio dials are calibrated in frequency. In Bloomington, the radio station B 97 broadcasts its FM signal at a frequency of 96.7 megahertz (MHz). What is the wavelength of this signal in meters?
8. Sodium vapour lamps are often used in residential street lighting. They give off a yellow light having a frequency of  $5.09 \times 10^{14}$  Hz. What is the wavelength of this signal in nanometers?
9. AM radio dials are calibrated in frequency. In Bloomington, an AM radio station broadcasts at a frequency of 830 kHz. What is the wavelength of these radio waves expressed in meters?
10. Some earthquake waves travel at 5 km/sec. What is the wavelength of these waves if the earth tremors are 10 per second?