Name: _____Date: _____ Period: _____

Electromagnetic Radiation Problems

$c = f \lambda$ $c = 3.0 \times 10^8$ m/s

1] A police radar signal has a frequency of 11 billion Hz. What is the wavelength of this signal?

2] What is the frequency of a microwave that has a wavelength of 0.015 m?

3] The frequency of a microwave is 1.2×10^9 Hz. What is its wavelength?

4] What is the frequency of an x-ray that has a wavelength of 1.5×10^{-9} m?

5] You cannot see high-frequency ultraviolet light rays, but they can damage your eyes and skin. Calculate the frequency of an ultraviolet light wave that has a wavelength of 3.0×10^{-7} m?

6] A radio station broadcasts a wave at a frequency of 1.0×10^{-6} Hz. What is its wavelength?

7] A satellite transmits a radio wave with a wavelength of 5.0×10^5 m. Calculate the frequency of the wave.

8] A communications satellite transmits a radio wave at a frequency of 9.4×10^9 Hz. What is the signal's wavelength?

9] An electromagnetic wave in a vacuum has a wavelength of 0.032 m. What is its frequency?

10] An electromagnetic wave has a frequency of 5.00×10^{14} Hz, as it travels through a vacuum, what is its wavelength?

11] A spectral analysis of a substance yields electromagnetic waves of frequencies in the 6.52×10^{14} Hz, what is the wavelength of this light? What color is this light?

12] A dish radio antenna with a diameter of 55 m is used to receive electromagnetic signals from deep space. What frequency is this antenna best suited to detect?