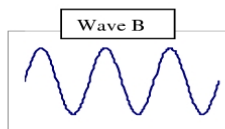
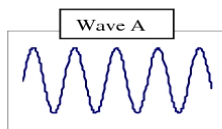


## Chapter 11 Worksheet

Homework is not collected or graded, but should be worked on seriously every week.

**Electromagnetic Radiation**

1. Consider the following two waves shown below.



Which wave has the longer wavelength? \_\_\_\_\_

Which wave has the higher frequency? \_\_\_\_\_

Which wave has the lower energy? \_\_\_\_\_

2. Suppose that Wave B (above) represents yellow light.
- a. If you double the wavelength of this light, is it in the Visible, IR or UV region of the EM spectrum? Explain.
- b. If you double the frequency of this light, is it in the Visible, IR or UV region of the EM spectrum? Explain.
3. A car radar detector transmits at a frequency of 10.53 GHz.
- a. What is the wavelength (in m) of this radiation?
- b. What is the energy (in J) of one photon of this radiation?
4. An ultraviolet lamp emits UV radiation. The energy of a single photon of this radiation is  $6.056 \times 10^{-16}$  J.
- a. What is the frequency (in  $s^{-1}$ ) of this UV radiation?
- b. What is the wavelength (in pm) of this UV radiation?
- c. What is the energy of 1 mole of these UV photons (in kJ/mol)?