Electromagnetic Spectrum Worksheet #1

1. In each of the following pairs, circle the form of radiation with the LONGER WAVELENGTH:
   
   a. red light or blue light
   b. microwaves or radiowaves
   c. infrared radiation or red light
   d. gamma rays or UV radiation

2. In each of the following pairs, circle the form of radiation with the GREATER FREQUENCY:
   
   a. yellow light or green light
   b. x-rays or gamma rays
   c. UV radiation or violet light
   d. AM radio waves or FM radio waves

3. In each of the following pairs, circle the form of radiation with the LOWER ENERGY:
   
   a. red light or blue light
   b. microwaves or radiowaves
   c. infrared radiation or red light
   d. gamma rays or UV radiation
   e. yellow light or green light
   f. x-rays or gamma rays
   g. UV radiation or violet light
   h. AM radio waves or FM radio waves

4. Springfield's "Classic Rock" radio station broadcasts at a frequency of 102.1 MHz. What is the length of the radio wave in meters?

5. A beam of light has a wavelength of 506 nanometers. What is the frequency of the light? What color is the light?

6. Blue light has a frequency of $6.98 \times 10^{14}$ Hertz. Calculate the wavelength of blue light in nanometers.
CHAPTER 4 REVIEW

Arrangement of Electrons in Atoms

SECTION 4-1

SHORT ANSWER  Answer the following questions in the space provided.

1. How does the photoelectric effect support the particle theory of light?

2. What is the difference between the ground state and the excited state of electron positions?

3. How can an atom emit a photon?

4. How can the energy levels of electrons be determined by measuring the light emitted from an atom?

5. Why does electromagnetic radiation in the ultraviolet region represent a larger energy transition than does radiation in the infrared region?