**Wave formula and Planck’s equation Review Worksheet**

Speed of light = wavelength x frequency *c = λν*

Planck’s equation = Planck’s constant x frequency *E = hν*

c = speed of light = 3.00 x 108 m/s h = Planck’s constant = 6.626 x 10-34 J·s

1. Baby monitors transmit radio waves with a frequency of 49 MHz.
   1. What is the wavelength of this electromagnetic radiation?
   2. What is the energy of this electromagnetic radiation?
2. Cell phones operate with radio waves with a frequency of 1,000 MHz.
   1. What is the wavelength of this electromagnetic radiation?
   2. What is the energy of this electromagnetic radiation?
3. Airport security scans baggage with x-rays with wavelength’s of 10 pm.
   1. What is the frequency of this electromagnetic radiation?
   2. What is the energy of this electromagnetic radiation?
4. Microwave ovens heat food with wavelengths of 12 cm.
   1. What is the frequency of this electromagnetic radiation?
   2. What is the energy of this electromagnetic radiation?
5. The chlorophylls a & b absorb visible light in the red and blue ranges. They do not absorb visible light in the 500 – 600 nm range.
   1. What are the frequencies of this electromagnetic radiation range?
   2. What are the energies of this electromagnetic radiation range?