Chem 11	**ELECTROMAGNETIC**	Name _____
	RADIATION	Block ____

Equations $c = v \cdot \lambda$ $E = h \cdot v$

where c = _____

   h = _____

1. The frequency of gamma radiation is 1×10^{22} Hertz (Hz) or waves/second. Calculate the wavelength (λ) in nanometres. Remember that $1m = 1 \times 10^9$ nm.

2. The wavelength of red light is 750 nm. Calculate its frequency.

3. The wavelength of blue light is 450 nm. Calculate its frequency.

4. The frequency of UV (ultraviolet) light is 1×10^{17} Hz and the frequency of gamma radiation is 1×10^{22} Hz. Show that gamma radiation is more harmful than the UV light component of sunshine which, in turn, is more harmful than red light. (Hint: The higher the energy, the more harmful the radiation.)

5. A green line in the spectrum of an element has a wavelength of 550 nm. Find the energy of photons (quanta) which give rise to this line.

6. Fill in the blanks

   1m = _____nm   1nm = _____m   1nm = _____Å

   Speed of light = _____   1m/s = _____cm/s

   1cm = _____Å   1 Hz = _____waves/second

   1Å = _____cm = _____m = _____nm

   h = _____'s constant   =   _____

   (1 angstrom = 1Å = 1 x 10^{-10} m. It is an old unit and not used in System International (SI).)

7. X-rays have a wavelength of 300 nm and sunlight has an average wavelength of 500 nm. Which is more damaging (i.e. has more energy)?

8. The wavelength of a violet line is 4.1 x 10^4 nm. Calculate its frequency.