**The Electromagnetic Wave Spectrum Notes 4/1/15**

**Warm- up:**



1. Convert 37.8 gigahertz to nanohertz. Put your answer in scientific notation.



2. A radio wave has a wavelength of 100 m. How many micrometers is this?



3. Convert 1.28 x 1012 microhertz to megahertz. Put your answer in standard notation.



**Electromagnetic Waves:**



Unlike \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ waves (from last unit) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



waves do not require a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_through.



**The speed of electromagnetic waves:**

All electromagnetic waves travel at \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ speed.



\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ miles per second



Or



\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_meters per second equal to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



This number is known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_and is referred to using the letter \_\_\_\_



c = \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_



So…. If\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, and c is the new speed, then our new formula is:



**c =**



**λ =**

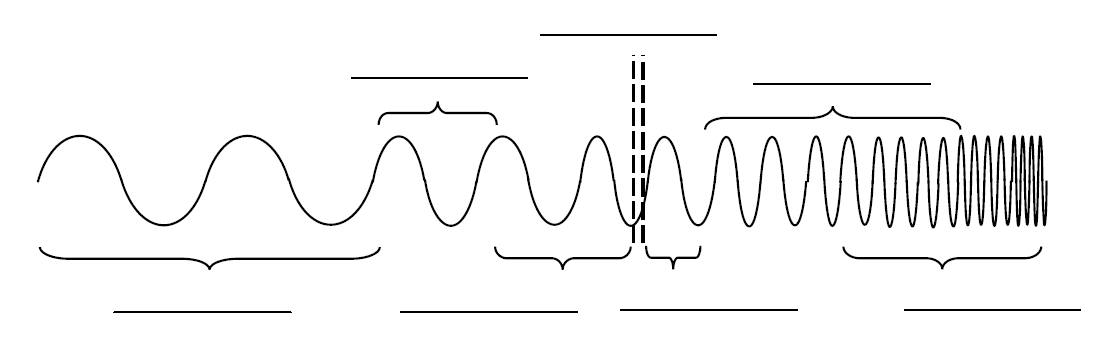


**f =**



**The Electromagnetic Wave Spectrum**







Higher frequencies are on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of the spectrum



Longer wavelengths are on the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_of the spectrum



High frequencies/ short wavelengths carry more \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.



Where are the highest energies??



Example#1:



An electromagnetic wave has a wavelength of 2,000 nm. What is the frequency of this wave?



Formula:



Plug in numbers:



Answer:

