**The Electromagnetic Wave Spectrum Notes**

**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: