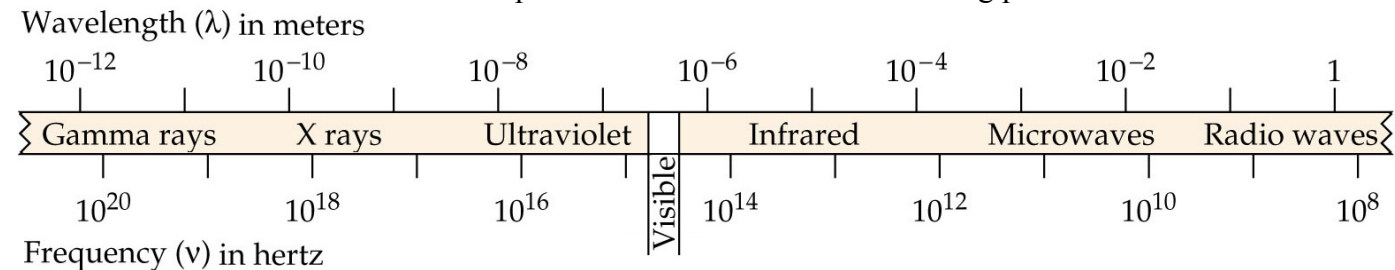


Light & Waves

1. What is the cause of all electromagnetic radiation?
2. What is wavelength? What symbol is used to represent it? What are its units?
3. What is frequency? What symbol do we use to represent it? What are its units?
4. What is the type of relationship between wavelength and frequency? Describe it.

Use the Reference Packet and the EM spectrum below to solve the following problems:



5. What is the frequency, in Hz, of an electromagnetic wave with a wavelength of 3.5×10^{-10} m? Draw a line at this wavelength/frequency on the EM spectrum above and state which region this is in.
6. What is the wavelength, in m, of an electromagnetic wave with a frequency of 2.29×10^8 Hz? Draw a line at this wavelength/frequency on the EM spectrum above and state which region this is in.

7. Calculate the wavelength of electromagnetic radiation, in nm, with a frequency of 2.50×10^{13} Hz [hint: calculate λ first then convert.]. Draw a line at this wavelength/frequency on the EM spectrum above and state which region this is in.

8. Calculate the frequency, in Hz, of electromagnetic radiation that has a wavelength of 9.35 pm (convert to m—Chart A!). Draw a line at this wavelength/frequency on the EM spectrum above and state which region this is in.

9. A popular radio station broadcasts with a frequency of 94.7 MHz. What is the wavelength of the broadcast, in m? (You must first convert MHz to Hz—Chart A!) Draw a line at this wavelength/frequency on the EM spectrum above and state which region this is in.

10. What is the speed of an electromagnetic wave with frequency 4.87×10^{12} Hz?