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2006 Wavelength Problems (link)

1. A certain microwave has a wavelength of 62.3mm.
a. Calculate the frequency of this microwave.
b. What is the energy in this wavelength?

2. A certain radio wave has a wavelength of 6.80 feet.
a. Convert the wavelength of this radio wave into meters. (1 meter = 39.37 inches)
b. Find the frequency of this radio wave.
c. What is the energy associated with this radio wave?

3. A certain wave on the border between microwaves and infrared waves has a frequency of 2.82 Tera Hz.
a. Calculate the wavelength of this wave in meters.
b. Convert the wavelength from part A into millimeters.
c. What is the energy associated with this microwave?

4. A low-frequency radio wave has a frequency of 250.kHz.
a. What is the wavelength of this radio wave?
b. What is the energy associated with this radio wave?

5. A certain X-ray has a wavelength of 0.148nm.
a. Calculate the frequency of this x-ray.
b. What is the energy associated with this wavelength?

6. 5. A certain X-ray has a wavelength of 0.098nm.
a. Calculate the frequency of this x-ray.
b. What is the energy associated with this wavelength?

7. A certain radio wave has a wavelength of 36.0 inches. (12 inches = 1 foot)
a. Convert the wavelength of this radio wave into meters. (1 meter = 3.28 feet)
b. Find the frequency of this radio wave.
c. What is the energy associated with this wavelength?

8. A certain radio wave has a wavelength of 2600 feet.
a. Convert the wavelength of this radio wave into meters. (1 meter = 3.28 feet)
b. Find the frequency of this radio wave.
c. What is the energy associated with this wavelength?

9. The wavelengths of visible light range from approximately 400. nanometers to 750. nanometers.   What is the difference in energy between a 750.nm red light and a 400.nm violet light?

10. You are standing on a dock and notice that it takes 1.78 seconds for the crest of two successive waves 2.65 meters apart to pass beneath you.
a. What is the frequency?
b. What is the period?
c. What is the wave speed?