

Wavelength Energy STUDY Problems

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?**