Wave Speed   Name:_____

Speed of a wave = wavelength x frequency	The speed of a wave depends on the medium that it is travelling through.
$v = \lambda f$	$f = 1/T$
v= velocity (speed), measured in m/s λ= wavelength, measured in m f= frequency, measured in Hz (Hz = 1/s)	f=frequency, measured in Hz T= period, measured in s

1. A wave along a guitar string has a frequency of 540 Hz and a wavelength of 2.5 meters. Calculate the speed of the wave.

2. The speed of sound in air is about 340 m/s. What is the wavelength of sound waves produced by a guitar string vibrating at 490 Hz?

3. The speed of light is 300,000,000 m/s. What is the frequency of microwaves with a wavelength of 0.01 meter?

4. What is the period of the microwaves in the above question?

5. The string on a piano that produces an A sharp vibrates with a frequency of 235 Hz. If the sound waves produced by this string have a wavelength in air of 1.49 meters, what is the speed of sound in air?

6. The average wavelength in a series of ocean waves is 15.0 meters. A wave crest arrives at the shore on an average of every 10.0 seconds, so the frequency is 0.100 Hz. What is the average speed of the waves?

Name:_____

7. An FM radio station broadcasts electromagnetic waves at a frequency of
   94.5 MHz (equal to 94,500,000 Hz). These radio waves have a
   wavelength of 3.17 meters. What is the speed of the waves?

8. Green light has a wavelength of 0.00000052 meters. The speed of light
   is 300,000,000 m/s. Calculate the frequency of green light waves with
   this wavelength.

9. Calculate the period of the green light waves in the question above.

10. What is the wavelength of a sound wave with a frequency of 220 Hz if
    its speed is 340 m/s?

11. The note A above middle C on a piano emits a sound wave with a
wavelength of 0.77 meters. What is the frequency of the wave? Use 340
m/s as the speed of the sound wave.