

Physical Science- Wave Calculations

Speed of a wave = wavelength x frequency

$v = \lambda f$

v= velocity (speed), measured in m/s

 λ = wavelength, measured in m

f= frequency, measured in Hz (Hz = 1/s)

The speed of a wave depends on the medium that it is travelling through.

$f = 1/T$

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.

Equation	Rearranged Equation	Work	Final Answer

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?

Equation	Rearranged Equation	Work	Final Answer

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

Equation	Rearranged Equation	Work	Final Answer

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

Equation	Rearranged Equation	Work	Final Answer

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?

Equation	Rearranged Equation	Work	Final Answer

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?

Equation	Rearranged Equation	Work	Final Answer

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?

Equation	Rearranged Equation	Work	Final Answer

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Peterson's



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