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**Physical Science: Wave Calculations**

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| velocity of a wave = wavelength × frequency  **v = λf**  v = velocity (speed), measured in m/s  λ = wavelength, measured in m  f = frequency, measured in Hz (Hz = 1/s) |

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

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| Given | Rearranged Equation | Work | Final Answer |
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1. The velocity 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?

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| Given | Rearranged Equation | Work | Final Answer |
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1. What is the wavelength of a sound wave with a frequency of 220 Hz if its velocity is 340 m/s?

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| Given | Rearranged Equation | Work | Final Answer |
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1. The note A above middle C on a piano emits a sound wave with a wavelength of 0.77 metres. What is the frequency of the wave? Use 340 m/s as the velocity of the sound wave.

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| Given | Rearranged Equation | Work | Final Answer |
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1. A wave traveling at 230 m/s has a wavelength of 2.1 metres. What is the frequency of this wave?

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| Given | Rearranged Equation | Work | Final Answer |
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1. The distance between two successive crests of a wave is 8.0 m. What is the velocity of these waves if they complete 0.5 vibrations per second?

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| Given | Rearranged Equation | Work | Final Answer |
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1. A radio station broadcasts at a frequency of 990 kHz. What is the wavelength of these radio waves? (Hint: convert kHz into Hz first. 1 kHz = 1000 Hz.) Radio waves travel at approximately 300,000,000 m/s.

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| Given | Rearranged Equation | Work | Final Answer |
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1. Calculate the velocity of a wave if it has a wavelength of 2 m and a frequency of 1.2 kHz.

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| Given | Rearranged Equation | Work | Final Answer |
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1. What is the frequency of radio waves which have a wavelength of 0.5 m?

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| Given | Rearranged Equation | Work | Final Answer |
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1. Waves of water pass the end of a jetty at the rate of 3 waves every 2 seconds. What is the velocity of these waves if the wavelength is 5 m?

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| Given | Rearranged Equation | Work | Final Answer |
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