

Wave Equations Practice

Name:

Period:

Date:

Assignment #:

1. Write the **name** and **units** for each variable below:

s:

f:

T:

λ :

2. Write the **formulas** for period, frequency, and wave speed in the space below (use the symbols from above).

s =

f =

T =

Solve the following wave problems using the formulas above. *Be sure to show your work and include units!*

3. A swing takes 1.5 seconds to go back and forth. What is the period of the swing? What is the frequency?

Formula	Rearranged Formula	Substitution	Answer with units
Formula	Rearranged Formula	Substitution	Answer with units

If a wave has a wavelength of 3 m and a frequency of 8 Hz, what is its speed?

Formula	Rearranged Formula	Substitution	Answer with units

4. A ball bounces up and down 2 times a second. What is the period of the bounce?

Formula	Rearranged Formula	Substitution	Answer with units

5. Cicadas (an insect) produce a buzzing sound that has a wavelength of 2.7 m and a frequency of 128 Hz. What is the speed of the sound wave they produce?

Formula	Rearranged Formula	Substitution	Answer with units

6. The lowest pitch a human ear can detect has a frequency of about 20 Hz. If the speed of sound is about 340 m/s, what is the wavelength of the wave?

Formula	Rearranged Formula	Substitution	Answer with units

7. You shake a slinky back and forth with a period of 0.25 seconds. What is the frequency of the slinky?

Formula	Rearranged Formula	Substitution	Answer with units

8. Calculate the speed of a wave that has a wavelength of 0.5 m and a frequency of 24 Hz.

Formula	Rearranged Formula	Substitution	Answer with units
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9. A wave with a frequency of 60 Hz travels through rubber with a wavelength of 0.9 m. What is the speed of this wave?

Formula	Rearranged Formula	Substitution	Answer with units
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10. A wave with a frequency of 60 Hz travels through steel with a wavelength of 8.5 m. What is the speed of this wave?

Formula	Rearranged Formula	Substitution	Answer with units
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11. **Honors:** The speed of light is 300,000,000 m/s. What is the wavelength of a wave of light if its frequency is 25,000 Hz?

Formula	Rearranged Formula	Substitution	Answer with units
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12. An ocean wave with a wavelength of 14 m travels along the surface at a speed of 7 m/s. What is the frequency of the wave?

Formula	Rearranged Formula	Substitution	Answer with units
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13. Earthquake waves have a very low frequency, around 0.05 Hz. If these waves travel around 6,000 m/s, what is their wavelength?

Formula	Rearranged Formula	Substitution	Answer with units
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14. A pendulum takes 6 seconds to swing back and forth. What is its period? What is its frequency?

Formula	Rearranged Formula	Substitution	Answer with units
Formula	Rearranged Formula	Substitution	Answer with units

15. Draw one wave. Label the crest, trough, amplitude, and wavelength.