

Formulas:

$$\lambda = v/f$$

$$v = \lambda f$$

$$f = v/\lambda$$

$$f = 1/T$$

$$T = 1/f$$

1. What is the wavelength of the wave that has a velocity of 37 m/s and a frequency of 10 Hz?

Formula: $\lambda = \frac{v}{f}$	Plug in numbers: $\lambda = \frac{37 \text{ m/s}}{10 \text{ Hz}}$	Answer: $\lambda = 3.7 \text{ m}$
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2. A transverse wave is traveling at 49 m/s and travels 14 cycles in 2 seconds. This makes its frequency 7 Hz. What is the wave's wavelength?

Formula: $\lambda = \frac{v}{f}$	Plug in numbers: $\lambda = \frac{49 \text{ m/s}}{7 \text{ Hz}}$	Answer: $7 \text{ m}$
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3. A wave is traveling at 108 m/s and its length from crest to crest is 0.4 m. What is the frequency of the wave?

Formula: $f = \frac{v}{\lambda}$	Plug in numbers: $f = \frac{108 \text{ m/s}}{0.4 \text{ m}}$	Answer: $270 \text{ Hz}$
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4. What is the period of the wave in number 3?

Formula: $T = \frac{1}{f}$	Plug in numbers: $T = \frac{1}{270 \text{ Hz}}$	Answer: $.004 \text{ s}$
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5. What is the wave's frequency if it has a period of 34 seconds?

Formula:	Plug in numbers:	Answer:
$f = \frac{1}{T}$	$f = \frac{1}{34\text{ s}}$	.029 Hz

6. What is the wave's frequency if the wave is traveling at 89 m/s and has a wavelength of 11 m?

Formula:	Plug in numbers:	Answer:
$f = \frac{v}{\lambda}$	$f = \frac{89\text{ m/s}}{11\text{ m}}$	8.09 Hz

7. What is the period of the wave in number 6?

Formula:	Plug in numbers:	Answer:
$T = \frac{1}{f}$	$T = \frac{1}{8.09\text{ Hz}}$	0.12 s

8. A wave is traveling at 117 meters every 5 seconds. The distance from crest to crest is .25 m. What is the frequency of this wave?

Formula:	Plug in numbers:	Answer:
$f = \frac{v}{\lambda}$	$f = \frac{23.4\text{ m/s}}{.25}$	93.6 Hz

9. What is the period of the wave in number 8?

Formula:	Plug in numbers:	Answer:
$T = \frac{1}{f}$	$T = \frac{1}{93.6\text{ Hz}}$	.011 s

10. What is the wavelength of the wave that has a velocity of 400 m/s and a frequency of 18 Hz?

Formula: $\lambda = \frac{v}{f}$	Plug in numbers: $\lambda = \frac{400 \text{ m/s}}{18 \text{ Hz}}$	Answer: $22.2 \text{ m}$
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11. A transverse wave is traveling at 100 m/s and travels 30 cycles in 2 seconds. What is the wave's wavelength?

Formula: $\lambda = \frac{v}{f}$	Plug in numbers: $\lambda = \frac{100 \text{ m/s}}{15 \text{ Hz}}$	Answer: $6.67 \text{ m}$
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12. A wave is traveling at 800 m/s and its length from crest to crest is 4 m. What is the frequency of the wave?

Formula: $f = \frac{v}{\lambda}$	Plug in numbers: $f = \frac{800 \text{ m/s}}{4 \text{ m}}$	Answer: $200 \text{ Hz}$
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13. What is the period of the wave in number 12?

Formula: $T = \frac{1}{f}$	Plug in numbers: $T = \frac{1}{200 \text{ Hz}}$	Answer: $.005 \text{ s}$
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14. What is the wave's frequency if it has a period of 80 seconds?

Formula: $f = \frac{1}{T}$	Plug in numbers: $f = \frac{1}{80 \text{ s}}$	Answer: $0.0125 \text{ Hz}$
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15. What is the wave's frequency if the wave is traveling at 98 m/s and has a wavelength of 13 m?

Formula:	Plug in numbers:	Answer:
$f = \frac{v}{\lambda}$	$f = \frac{98 \text{ m/s}}{13 \text{ m}}$	7.54 Hz

16. What is the period of the wave in number 15?

Formula:	Plug in numbers:	Answer:
$T = \frac{1}{f}$	$T = \frac{1}{7.54 \text{ Hz}}$	.13 s

17. A wave is traveling at 220 meters every 3 seconds. The distance from crest to crest is 0.4 m. What is the frequency of this wave?

Formula:	Plug in numbers:	Answer:
$f = \frac{v}{\lambda}$	$f = \frac{73.7 \text{ m/s}}{0.4 \text{ m}}$	$f = 184.25 \text{ Hz}$

18. What is the period of the wave in number 17?

Formula:	Plug in numbers:	Answer:
$T = \frac{1}{f}$	$T = \frac{1}{184.25 \text{ Hz}}$	.005 s