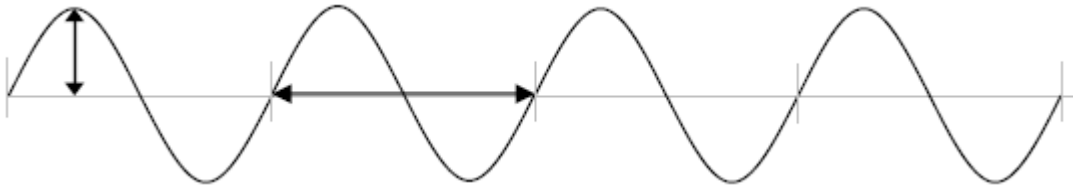
Wave Worksheet

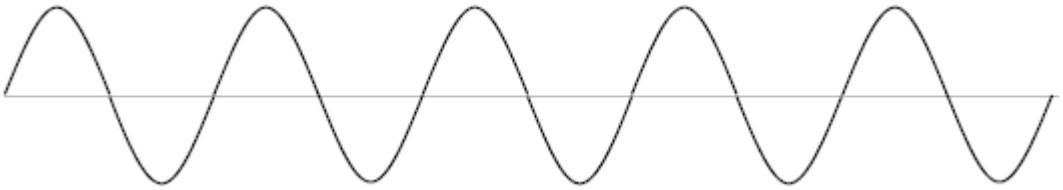
One full wave (cycle) Wave train – two or more waves



Amplitude – measures the energy of a transverse wave
a) measured from the equilibrium position to the top of a crest or the bottom of a trough (see vertical arrow)
Wavelength – length of a single wave cycle (horizontal arrow double sided arrow)
Frequency-# of waves that pass a point in a given amount of time
Speed = wavelength x frequency

The time from the beginning to the end of the wave train in each situation is 1 second.

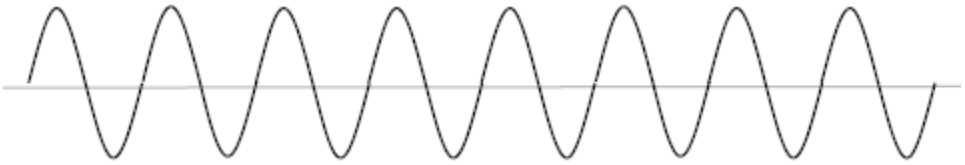
Wave 1



a) How many waves are there in this wave train? _____

b) Wavelength _____ cm c) Amplitude _____ cm d) frequency _____ Hz e) speed _____ cm/s

Wave 2



a) How many waves are there in this wave train? _____

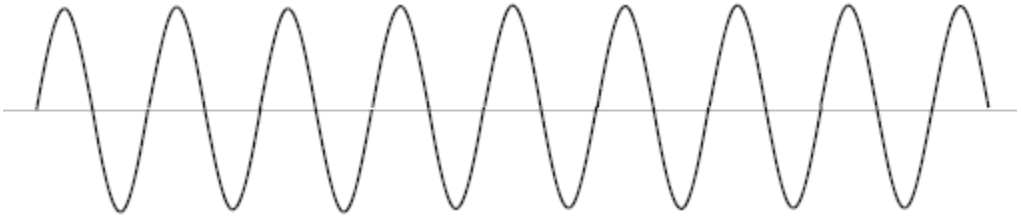
b) Wavelength _____ cm c) Amplitude _____ cm d) frequency _____ Hz e.) speed _____ cm/s

Wave 3

a) How many waves are there in this wave train? _____

b) Wavelength _____ cm c) Amplitude _____ cm d) frequency _____ Hz e.) speed _____ cm/s

Wave 4



a) How many waves are there in this wave train? _____

b) Wavelength _____ cm c) Amplitude _____ cm d) frequency _____ Hz e.) speed _____ cm/s

Wave 5

a) How many waves are there in this wave train? _____

b) Wavelength _____ cm c) Amplitude _____ cm d) frequency _____ Hz e.) speed _____ cm/s

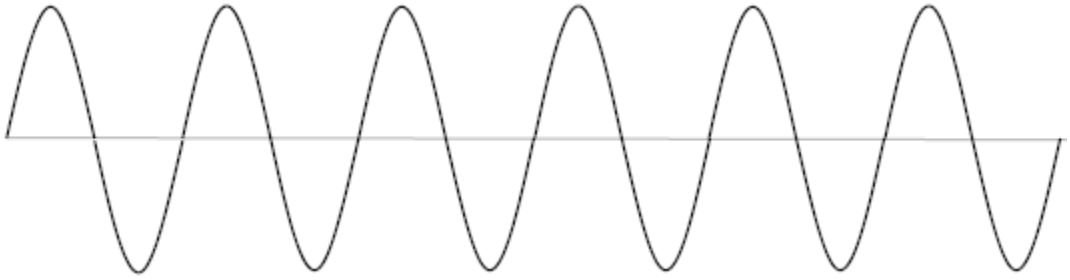
Wave 6

a) How many waves are there in this wave train? _____

b) Wavelength _____ cm c) Amplitude _____ cm d) frequency _____ Hz e.) speed _____ cm/s

Wave 7

If this entire wave train is 30 meters long what is the wavelength of this wave? _____



Problems: (Do these on a separate sheet of paper. Show equation, work, final answer with correct units.)

1. What is the wavelength of a sound wave with a frequency of 50 Hz? (Speed of sound is 342 m/s)

2. A sound wave in a steel rail has a frequency of 620 Hz and a wavelength of 10.5 m. What is the speed of sound in steel?

3. Determine the frequency of a microwave 6.0 cm in length. (A microwave is an electromagnetic wave. It travels through space at a speed of 3.0 x 10 ^8 m/s)

4. What is the period of the microwave in problem 3?