**Period**

-The length of time it takes for a wave to go through one complete cycle (one complete wavelength) it is called the period.

-Time per cycle.

-The period has a time value so it could be measured in seconds, minutes, hours.

-The period (T) has units of seconds (usually)

-want we are really saying is seconds/cycle

Ex. The period of the wave is 6 seconds

**Frequency**

-What does frequency means?

Ex. How do you get your hair cut? Once every 6 weeks.

The frequency of a wave refers to how often the particles of the medium complete a wave cycle when a wave passes through the medium.

Frequency (**f**) has units of cycles/second which is defined as Hertz.(Hz)

Ex. The frequency of the wave is 200 cycles/ second or the frequency of the wave is 200Hz.

How are frequency and period related inversely?

**Period** (T) = Seconds **Frequency**= Cycles

Cycle Seconds

**Therefore** T = 1 and F= 1

F T

**Amplitude of a wave**

-Wave can have some frequency, different wavelength

-Waves can have same wavelength, different frequency

-A large amplitude wave will transport more energy than a small amplitude wave in the same medium.

-Energy transferred is proportional to the amplitude squared.

-**E**  **A**

So is you double the amplitude energy transfer will quadruple.

Amps= 2cm

Amps = 6 cm XA= A2

A1

E is x bigger

E A = 6cm

E (3) 2cm

E is 9x greater

A is 3x bigger

-A medium with a lesser density will have a large amplitude.

-A medium that is more elastic (springy) will have a large amplitude.

**Velocity**

What does velocity mean? (What are the units?)

Distance traveled per unit of time

V= d (m/s, k/hr)

T

Wavelength, has Units of Length m, Km

Period, T Has units of time s, min, hr. So velocity of the wave could be V= = m

T s

But, we also know that T=1 so V = = x f V =

f 1 1

V= 

T = 1

F

V= x f

1

1 x f

F 1

V= x f

1

V= x f

-Wave velocity depends upon the medium through which the wave is moving. Only an alteration in the properties of the medium will cause a change in the velocity.

- Physical properties of a medium could include, the density, the temperature, the elasticity, tension on a rope or slinky, depth of water.

- Wave properties such as amplitude or wavelength Do Not affect the velocity.

Ex. A wave is traveling through a rope with a frequency of 200 Hz. It’s wavelength is .50m What is it’s velocity.

f= 200Hz

=.50m

V=?

= 2 x f

= .50m x 200fz

V= 1.0m/s