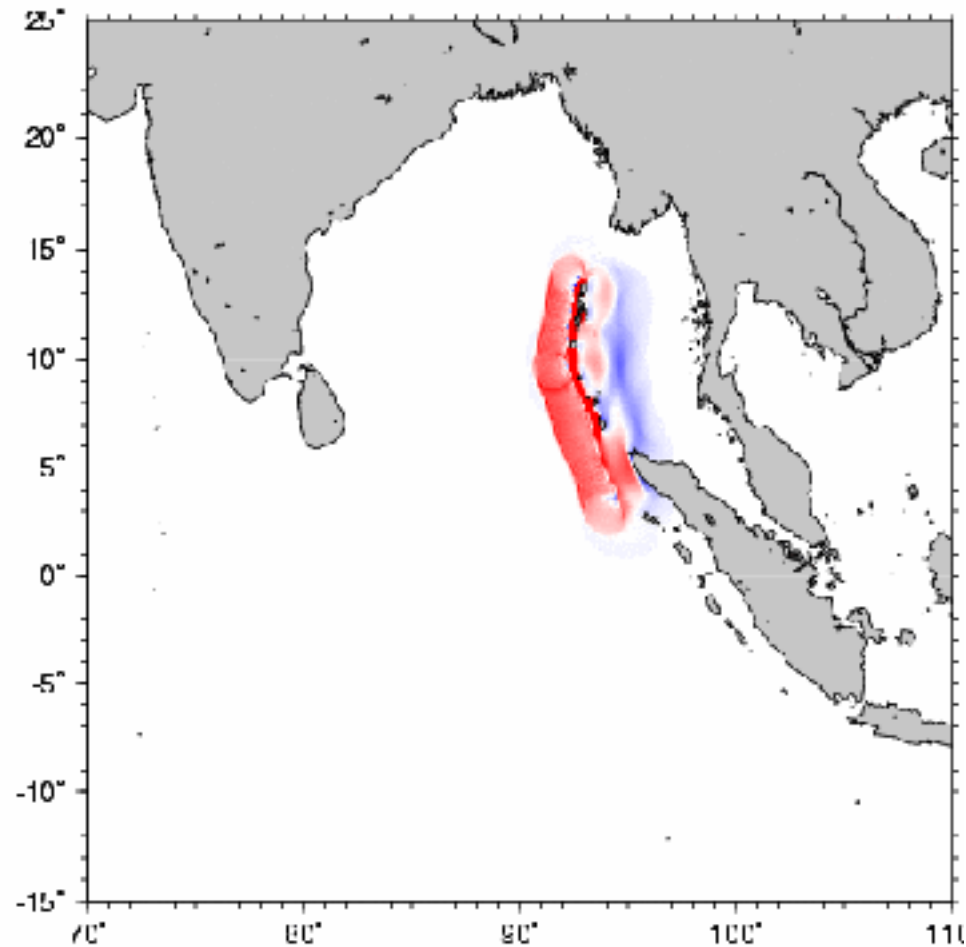


Waves

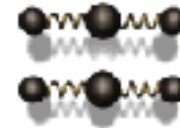
2004 Sumatra Earthquake 0+0 min



**Tsunami caused by
Sumatra earthquake**

Waves: Definitions

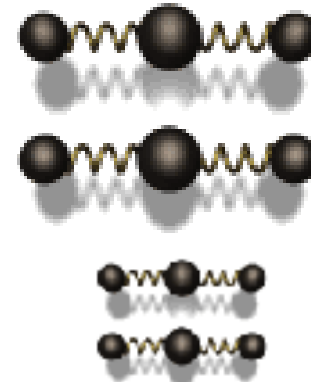
- **Vibration (V)** – Back and forth motion.



- **Frequency (F)** – The number of vibrations something makes in one second.



- **Amplitude (A)** – The size of the vibration.



- **Resonance** – Large vibrations when something is pushed at its natural frequency

What is your favorite type of wave?

A) Sound waves



C) Light waves



B) Water waves

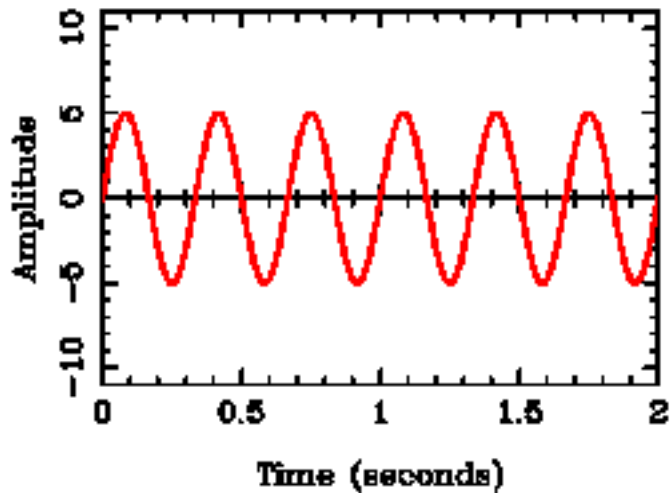


D) Earthquakes

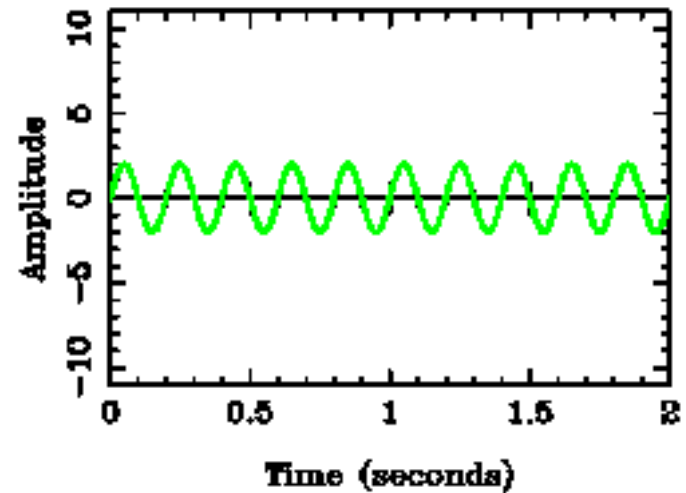


Which wave has the largest frequency?

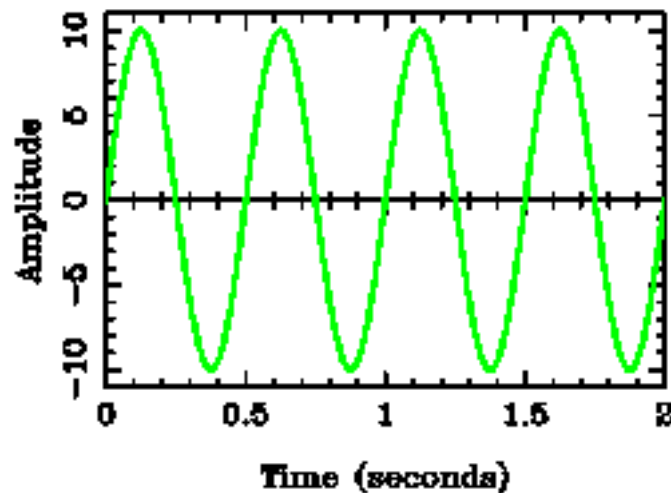
Wave A



Wave B

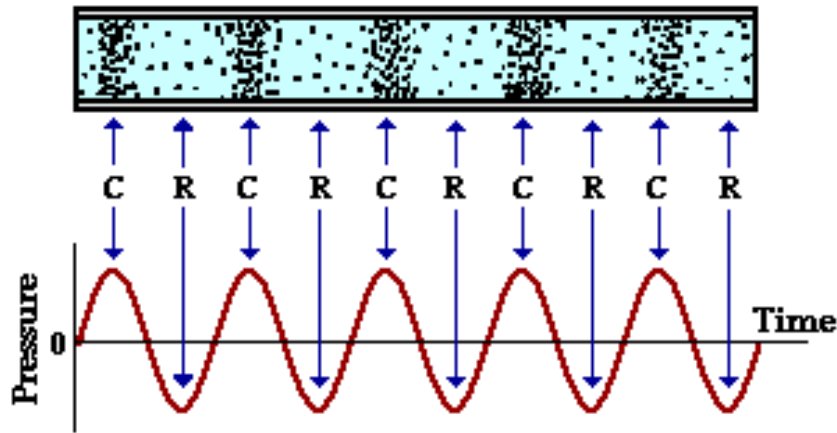


Wave C



Waves: Sound

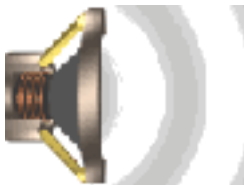
Sound is a Pressure Wave



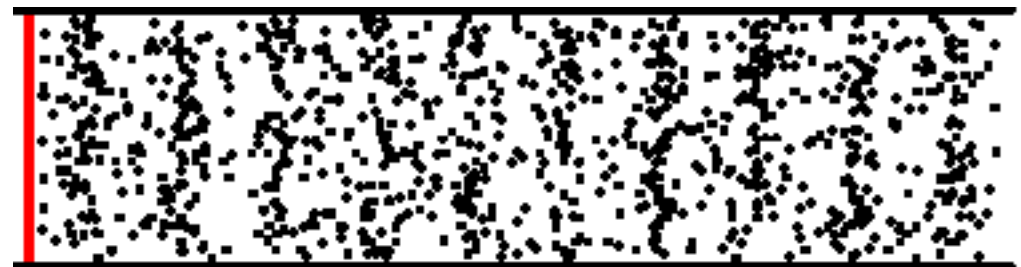
NOTE: "C" stands for compression and "R" stands for rarefaction



Tuning Fork Cause air to be compress and rarified

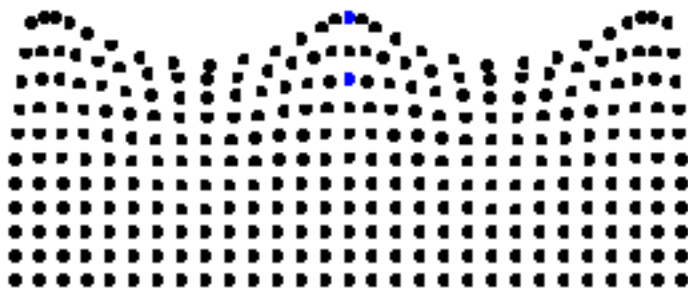
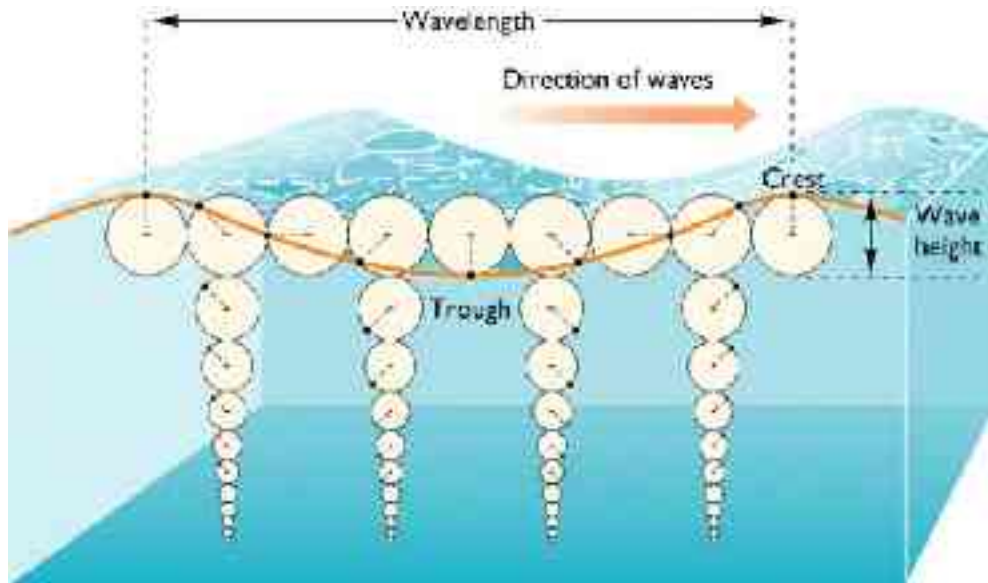


Loudspeaker

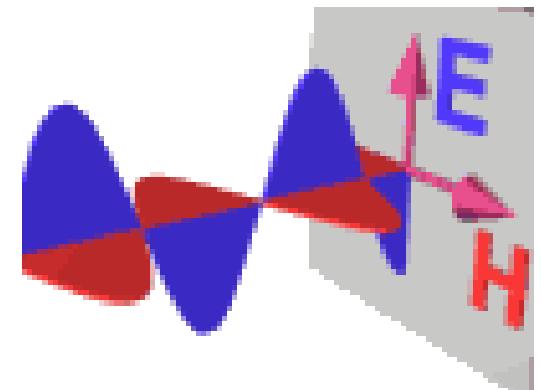
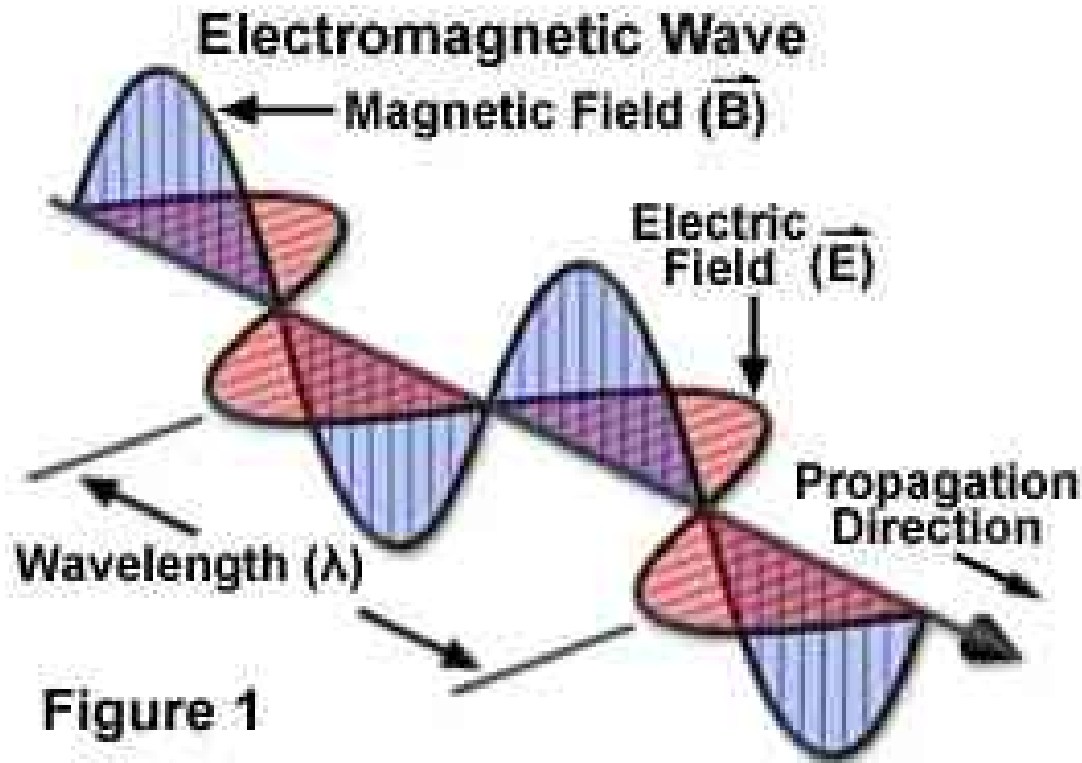


Longitudinal Wave

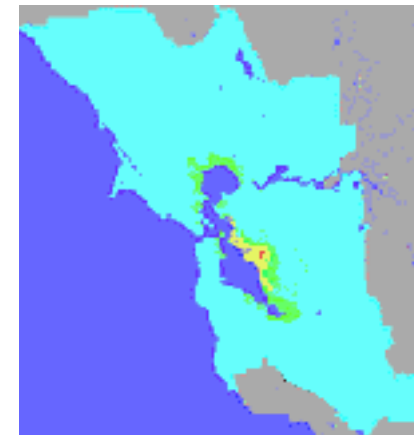
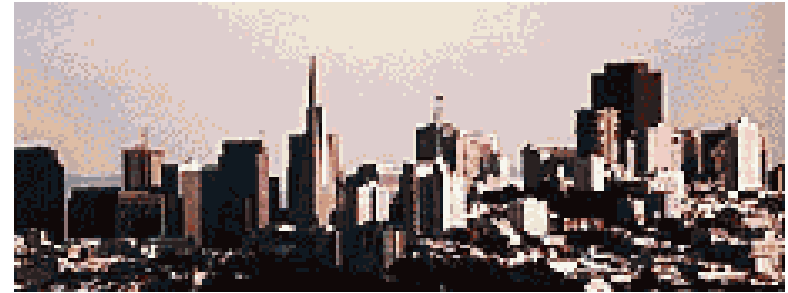
Waves: Water



Waves: Light

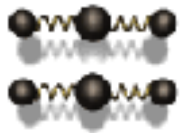


Waves: Earthquake

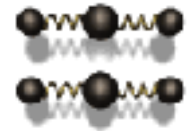


Waves: Frequency

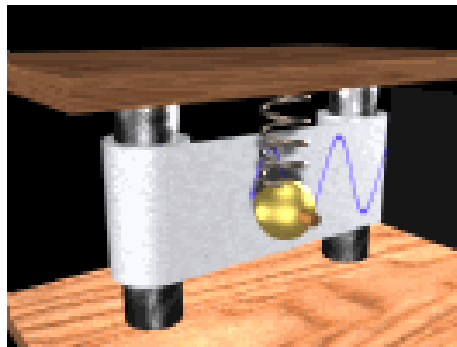
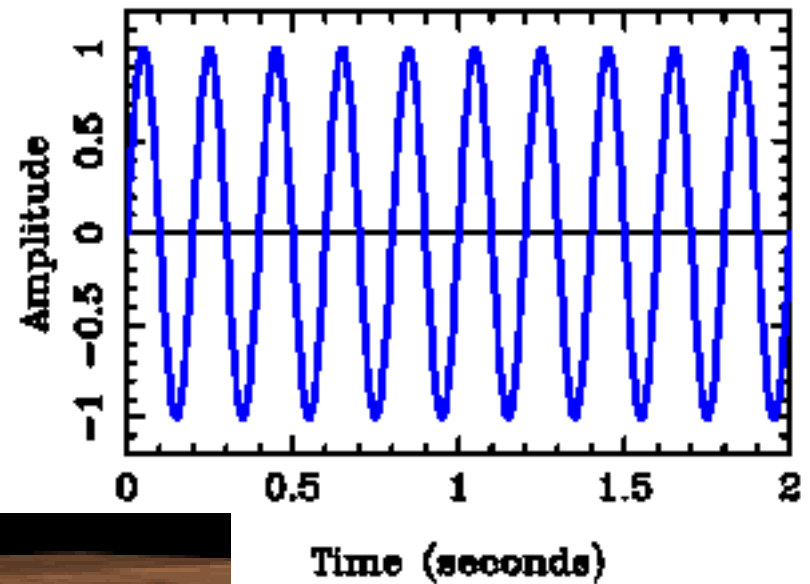
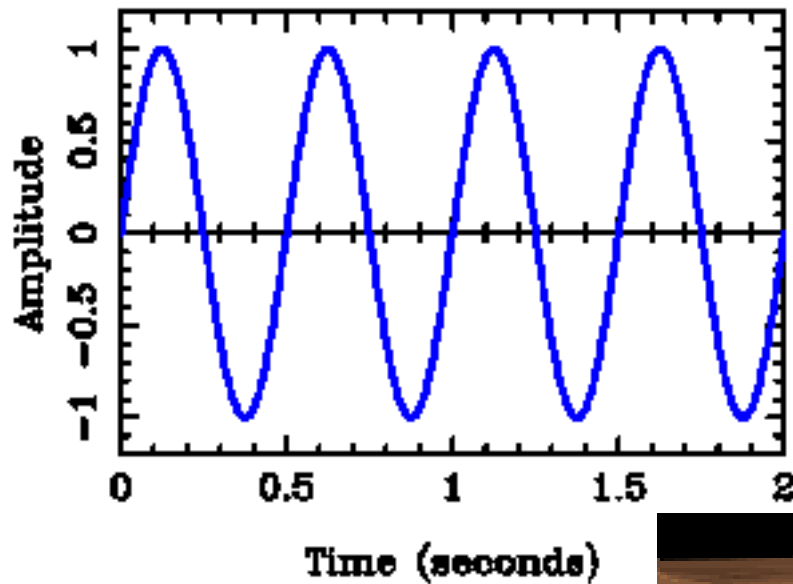
- **Frequency (F)** – The number of vibrations something makes in one second.



Low Frequency



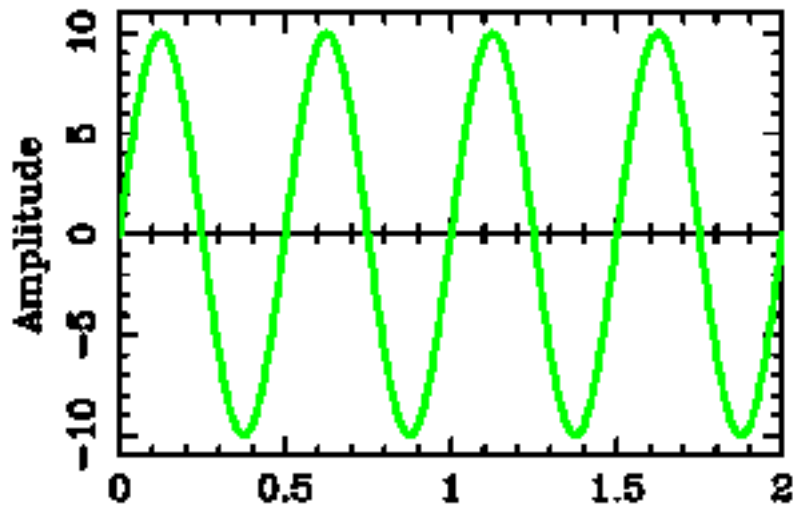
High Frequency



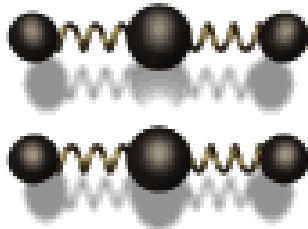
Waves: Amplitude

- **Amplitude (A)**– The size of the vibration.

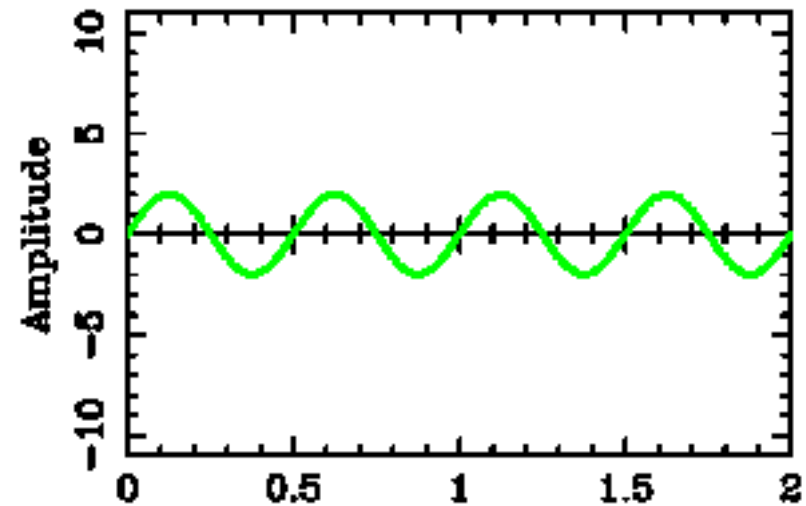
Large Amplitude



Time (seconds)



Small Amplitude

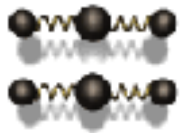


Time (seconds)

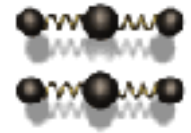


Waves: Frequency

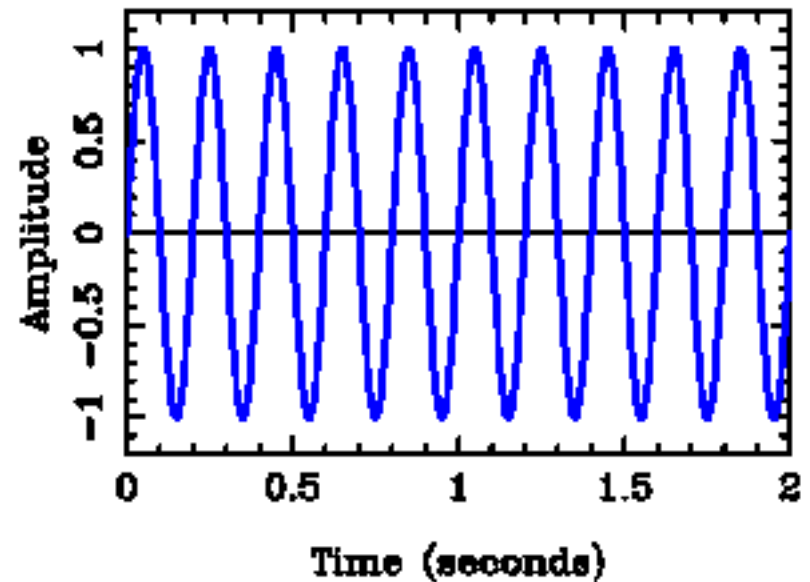
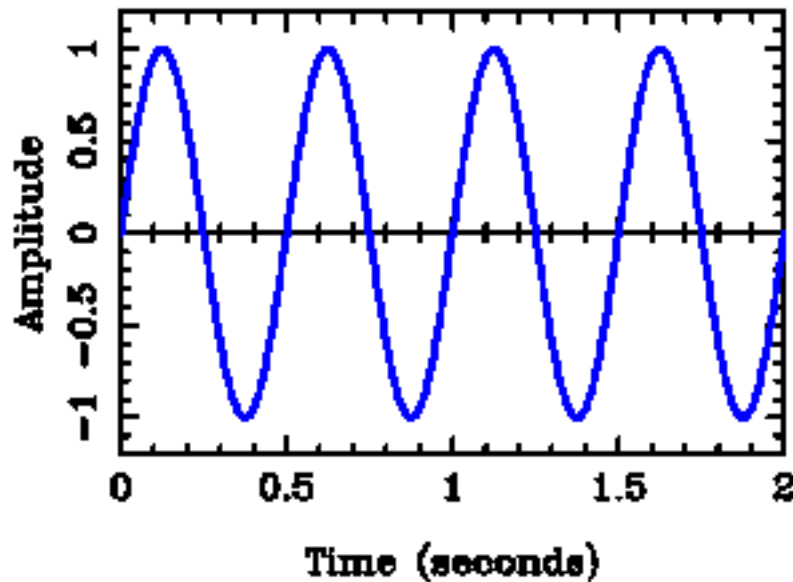
- **Frequency (F)** – The number of vibrations something makes in one second.



Low Frequency



High Frequency

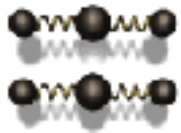


What's the Frequency?

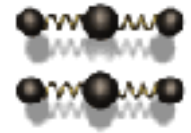
$$F = ?$$

Waves: Frequency

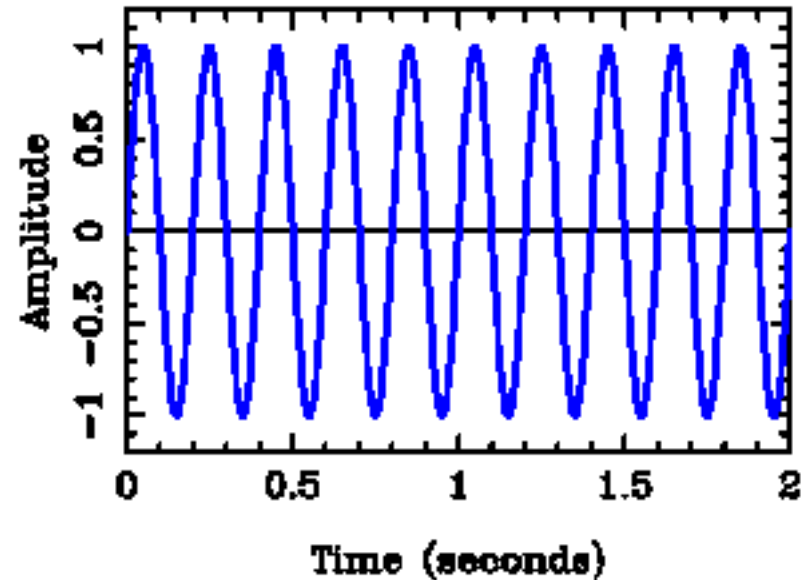
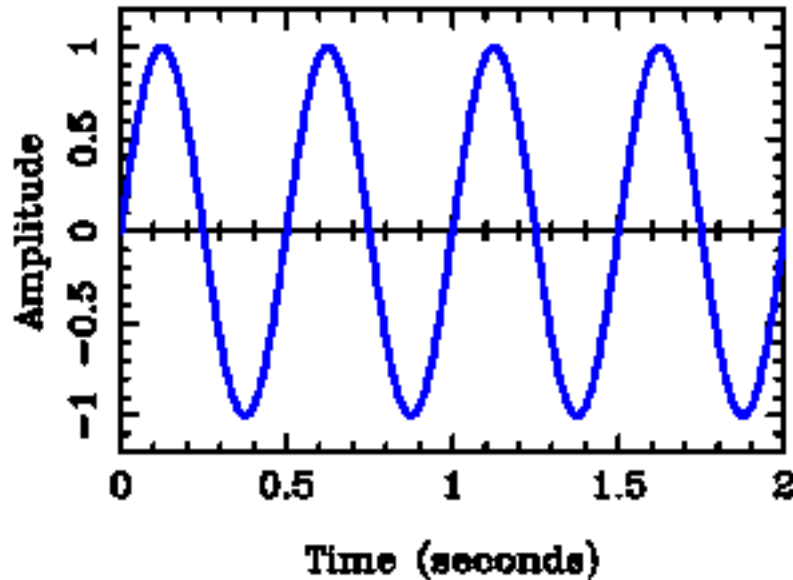
- **Frequency (F)** – The number of vibrations something makes in one second.



Low Frequency



High Frequency

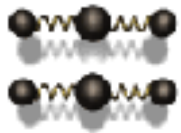


What's the Frequency?

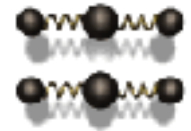
$$F = V / T = 4 / 2 = 2$$

Waves: Frequency

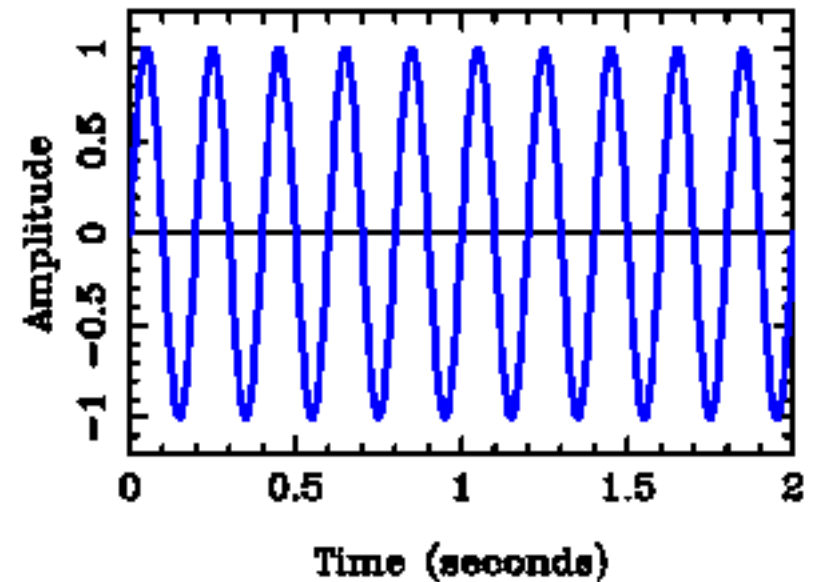
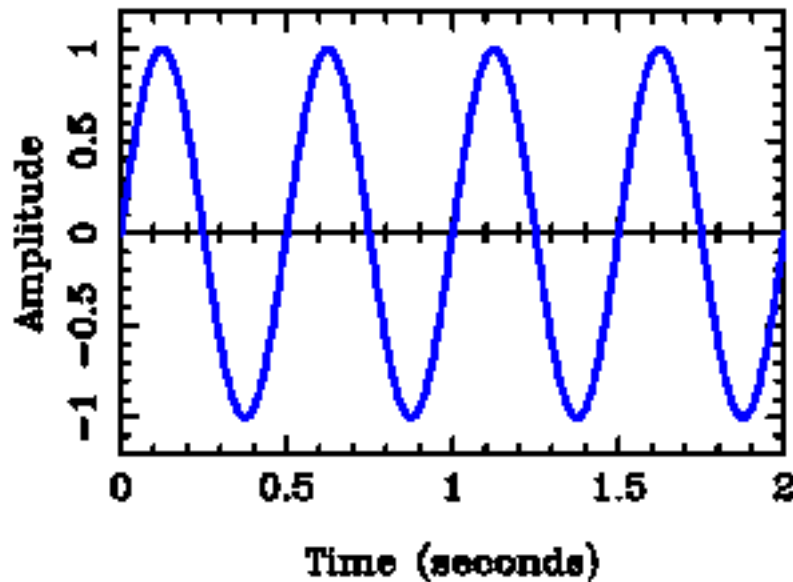
- **Frequency (F)** – The number of vibrations something makes in one second.



Low Frequency



High Frequency



What's the Frequency?

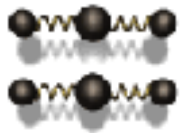
$$F = V / T = 4 / 2 = 2$$

What's the Frequency?

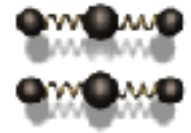
$$F = ?$$

Waves: Frequency

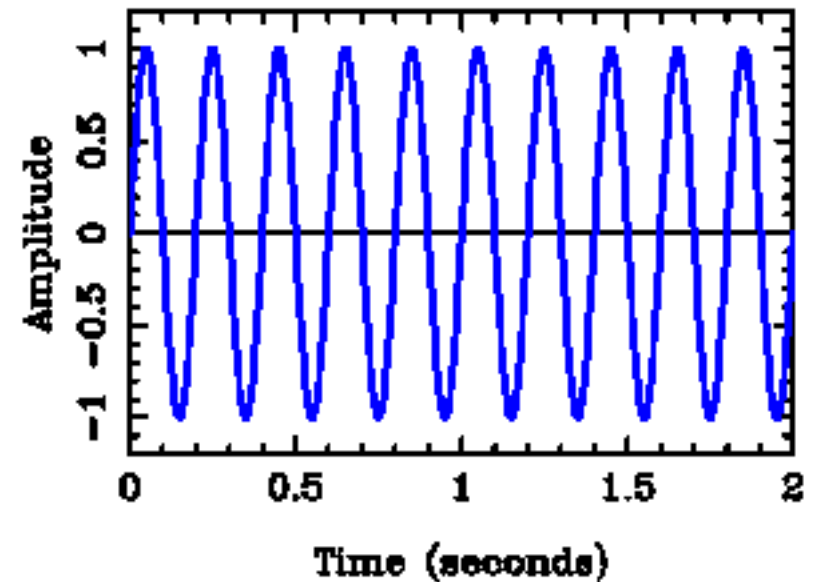
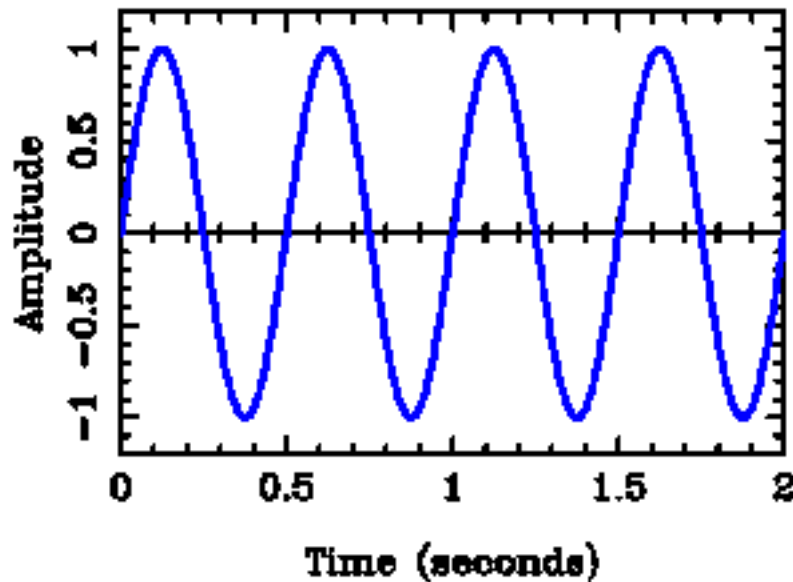
- **Frequency (F)** – The number of vibrations something makes in one second.



Low Frequency



High Frequency



What's the Frequency?

$$F = V / T = 4 / 2 = 2$$

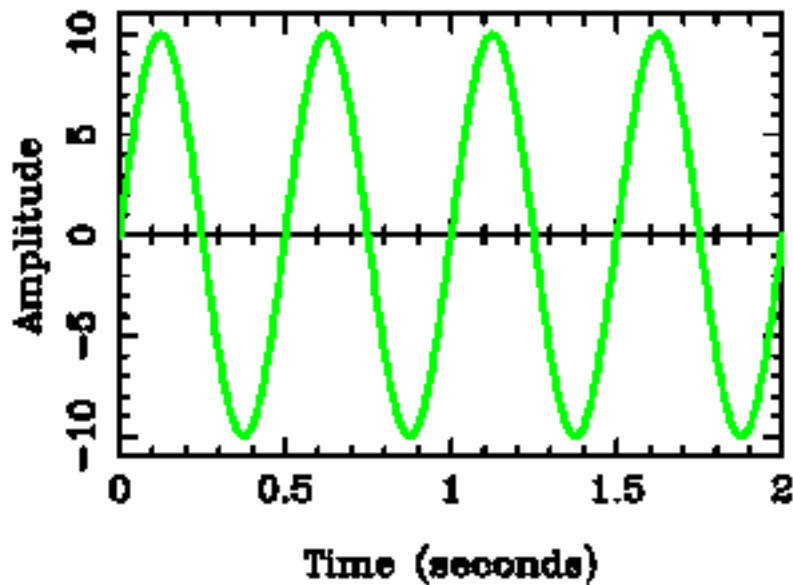
What's the Frequency?

$$F = V / T = 10 / 2 = 5$$

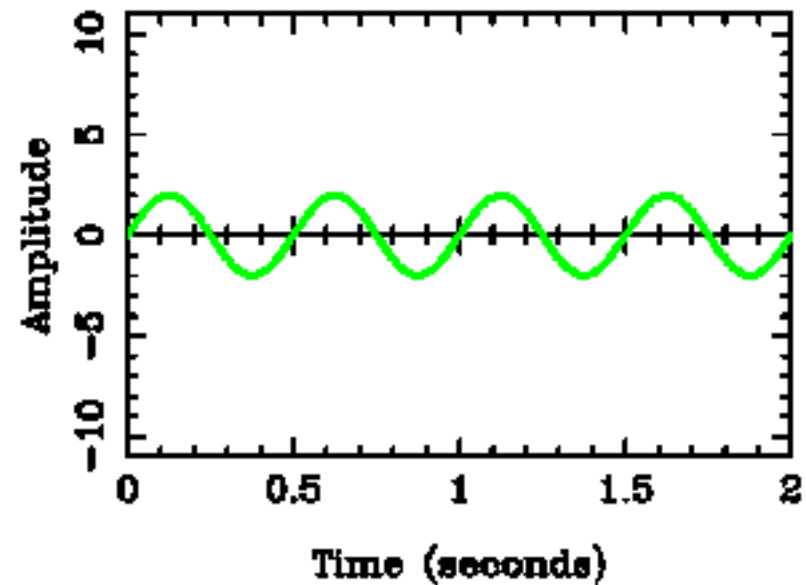
Waves: Amplitude

- **Amplitude (A)**– The size of the vibration.

Large Amplitude



Small Amplitude



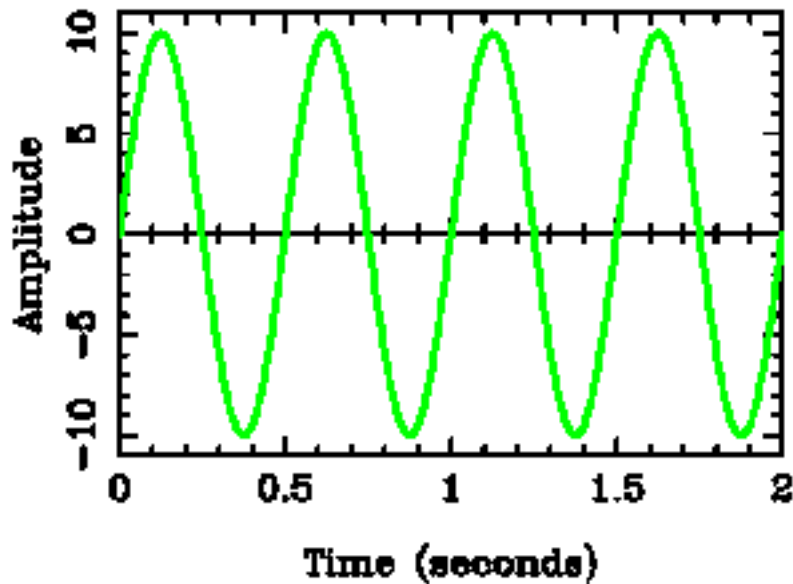
Whats the **Amplitude**?

$$A = ?$$

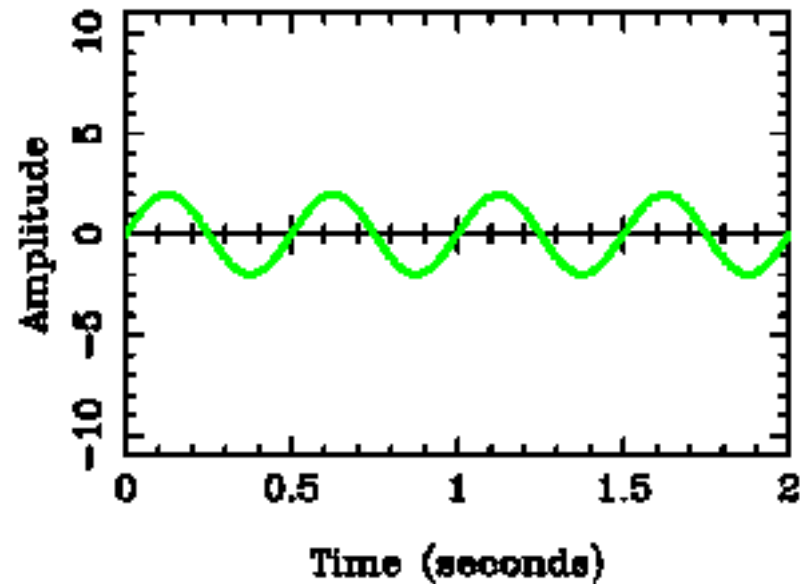
Waves: Amplitude

- **Amplitude (A)**– The size of the vibration.

Large Amplitude



Small Amplitude



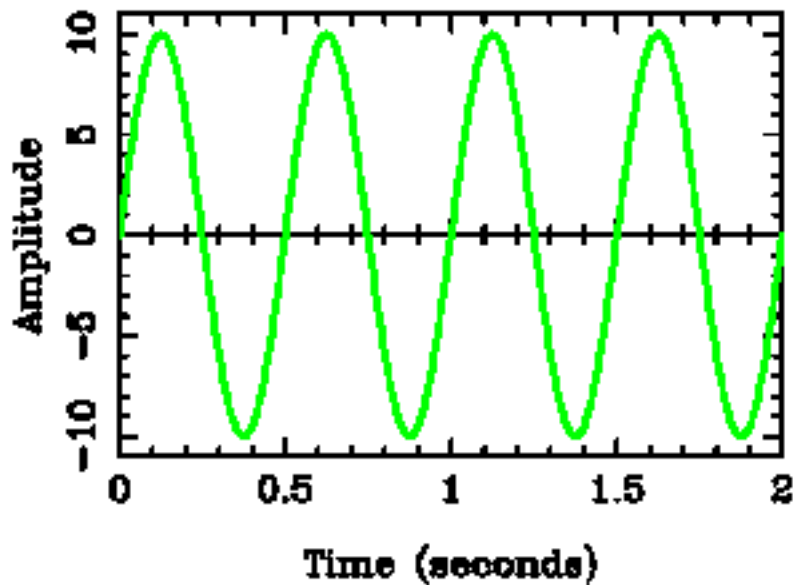
Whats the **Amplitude**?

$$A = 10$$

Waves: Amplitude

- **Amplitude (A)**– The size of the vibration.

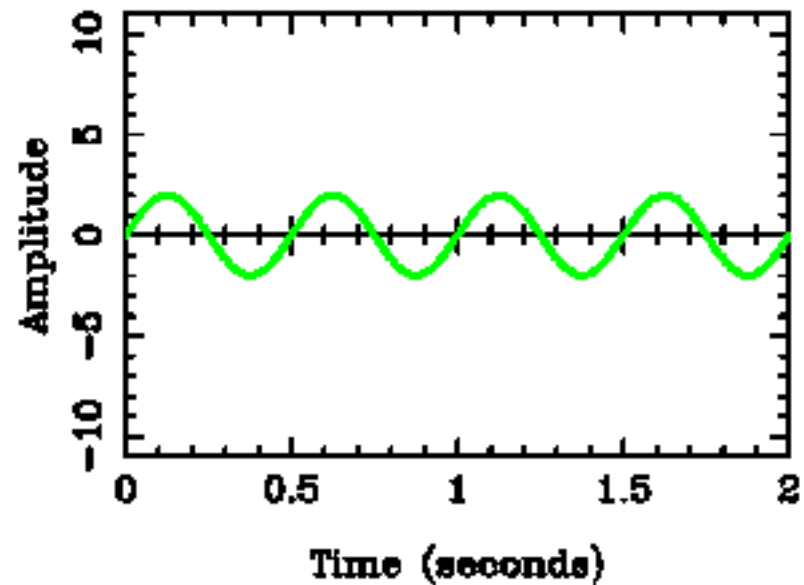
Large Amplitude



Whats the **Amplitude**?

$$A = 10$$

Small Amplitude



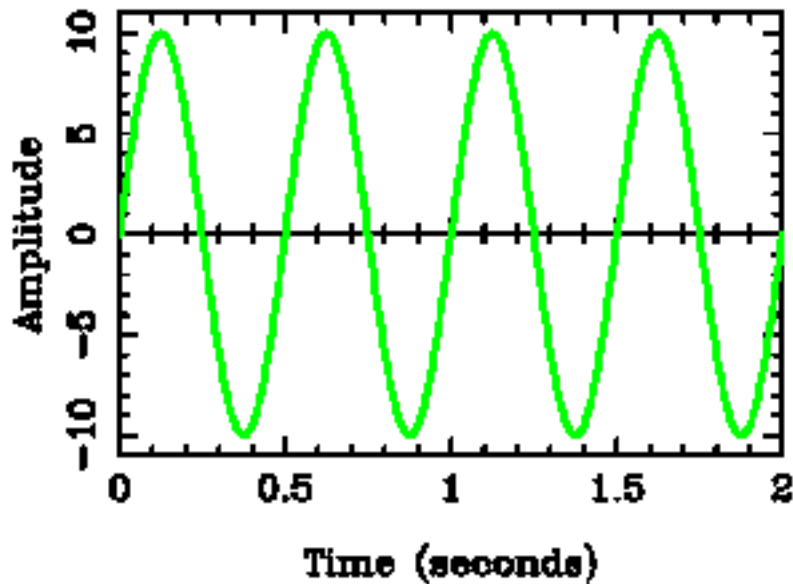
Whats the **Amplitude**?

$$A = ?$$

Waves: Amplitude

- **Amplitude (A)**– The size of the vibration.

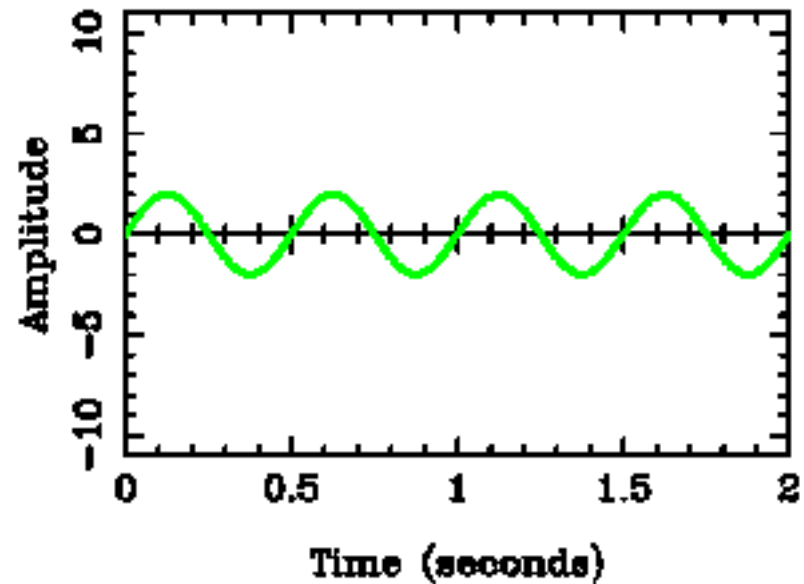
Large Amplitude



Whats the **Amplitude**?

$$A = 10$$

Small Amplitude

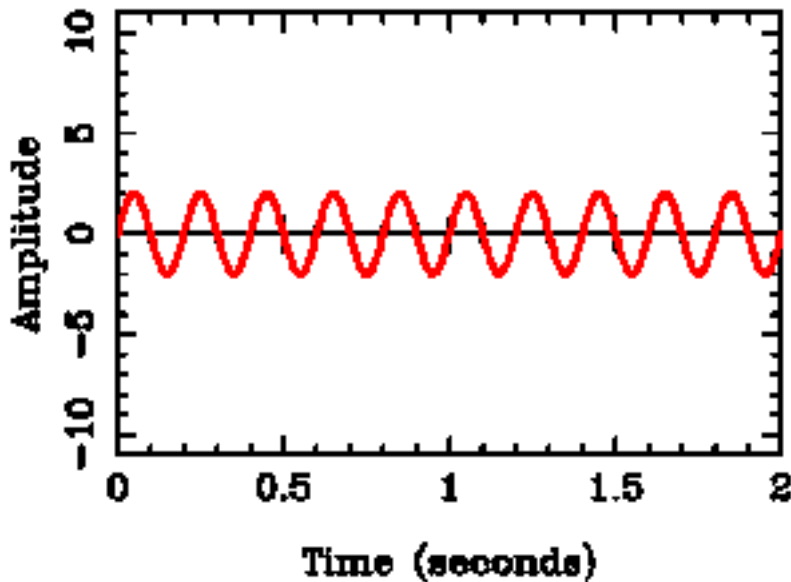


Whats the **Amplitude**?

$$A = 2$$

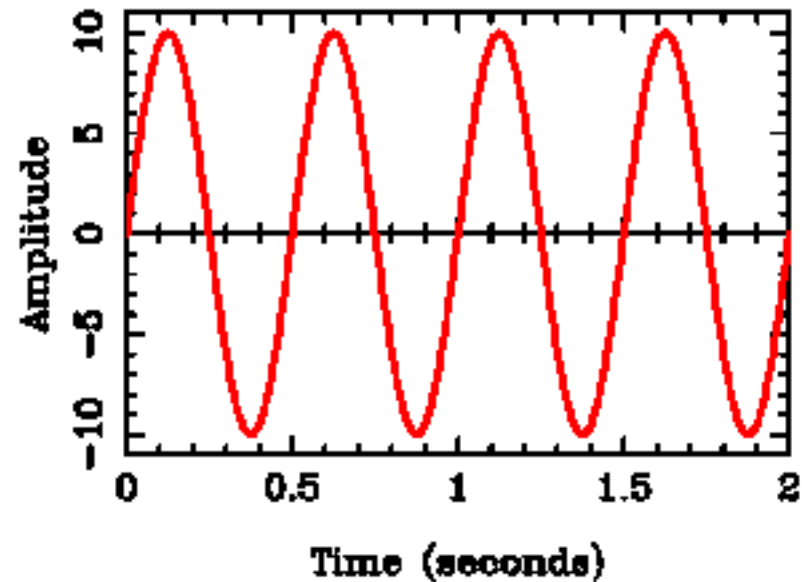
Waves: Frequency and Amplitude

High Frequency and Small Amplitude



“Soft and High Pitch”

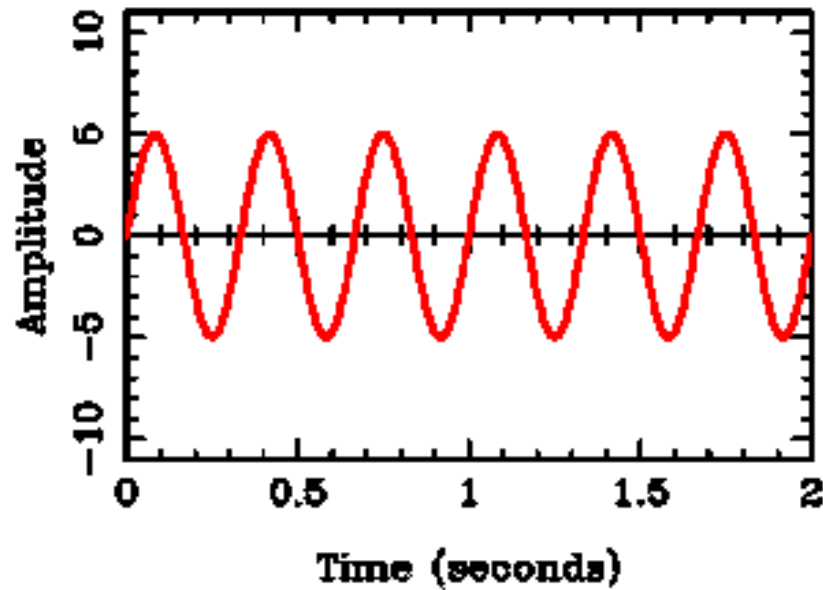
Low Frequency and Large Amplitude



“LOUD and Low Pitch”

What is the frequency?

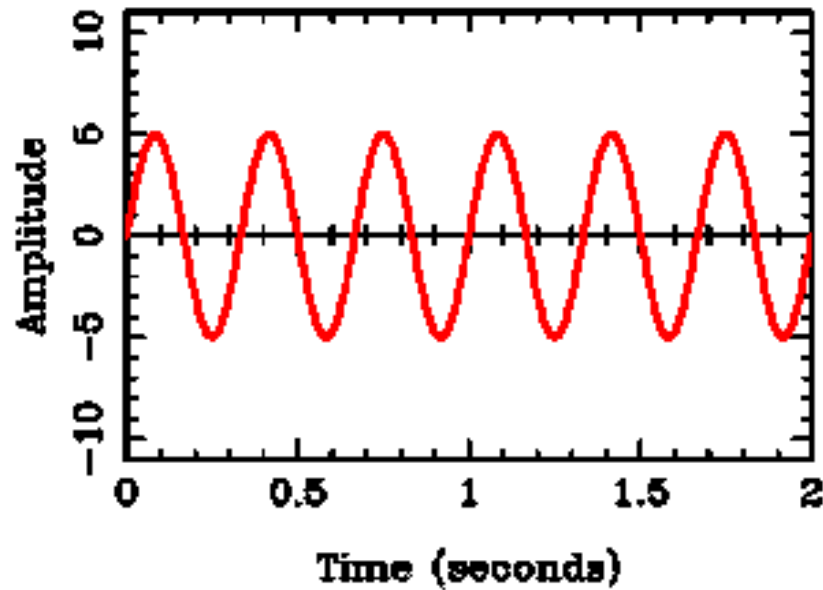
Wave A



- A) 2
- B) 3
- C) 5
- D) 6

What is the amplitude?

Wave A



- A) 3
- B) 5
- C) 6
- D) 10

Waves: Traveling Pulse

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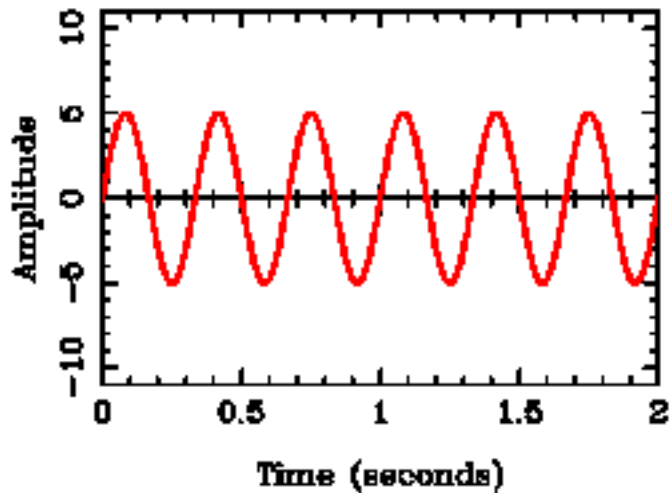
Waves: Resonance

- **Resonance** – Large vibrations when something is pushed at its natural frequency

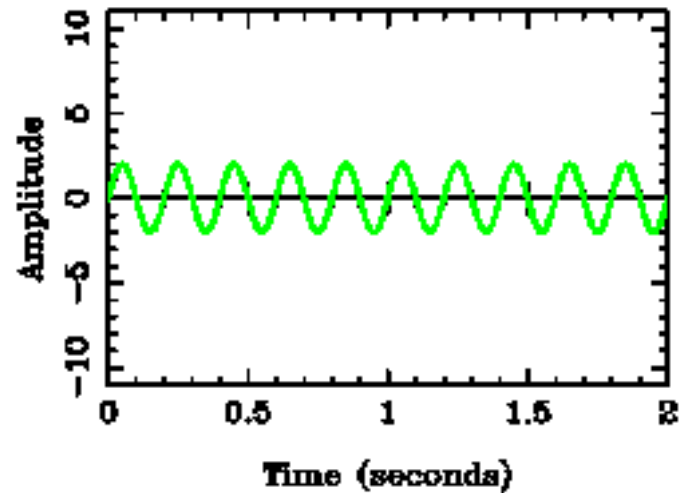


Which wave has the largest frequency?

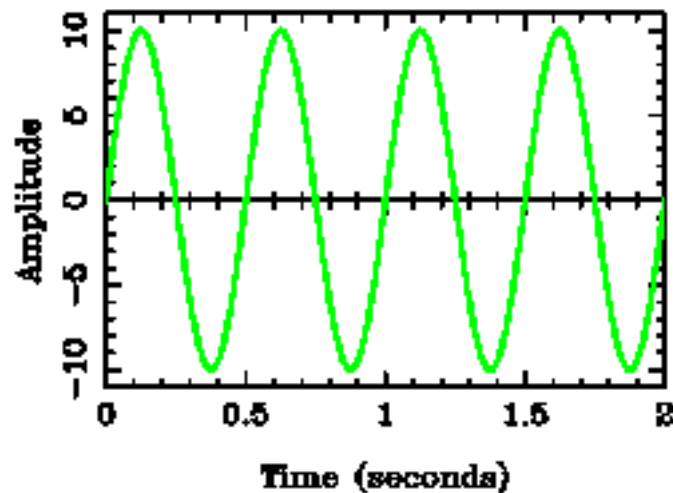
Wave A



Wave B

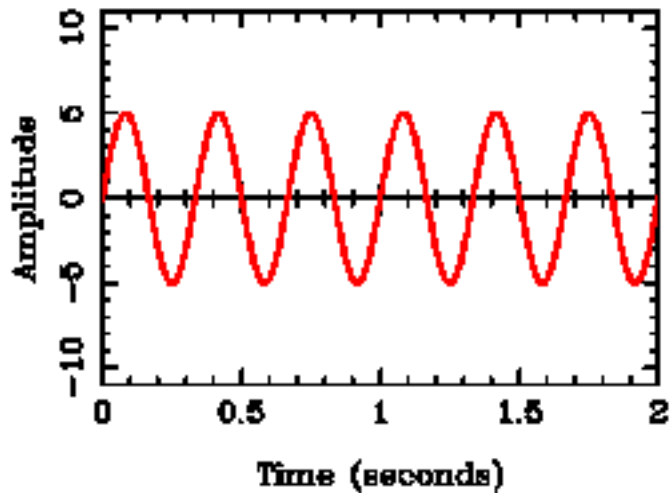


Wave C

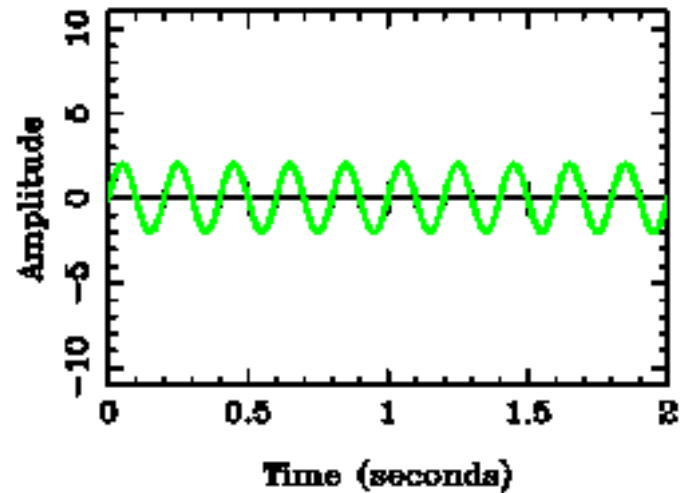


Which wave has the largest amplitude?

Wave A



Wave B



Wave C

