**Wave Encounters!**

**When a similar wave meets another similar wave, this can happen…**

**Interference**

When two or more waves come together, this can cause **interference**. Interference happens when waves meet and their **energy** is added together or their **energy** is taken away.

**Constructive Interference**

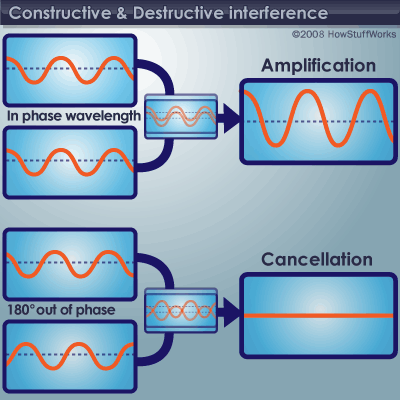
When the crests and troughs of two waves come together exactly, this can cause **constructive interference**. When this happens the **energy** of the two waves is added together.

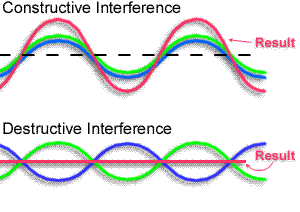
This means that two mechanical waves with small **amplitudes**, can add together to make one larger wave with a greater a**mplitude**.

**Destructive Interference**

When the crests of one wave joins with the trough of another wave, this can cause **desstructive interference** . When this happens the **energy** of one of the waves is subtracted from the other wave.

Two identical sound waves can even cancel each other out so you cannot **hear** them.





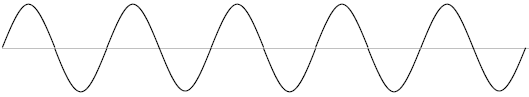
**What is the relationship between wavelength and frequency?**

**Define Wavelength**.   
**Wavelength is the distance from one crest to the next or one trough to the next**.

**Define Frequency**.   
**Frequency is the number of waves passing a given point per second**.

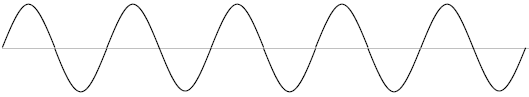
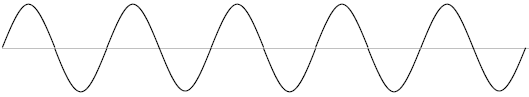
It is usually written as waves per second. (waves / second)

Below is a wave with a frequency of 5 Waves per second!



Below is that same wave with a decrease in wavelength!

What is the frequency of the wave below per second?



Answer: **10 waves per second!**

When you decreased the wavelength, what happened to the frequency? **The frequency increased!**

**What is the relationship between wavelength and frequency?**

**-Increase the frequency you decrease the wavelength.**

**-Increase the wavelength you decrease the frequency.**

**This is an inverse relationship. Inverse means opposite!**

**Thinking about frequency and wavelength…When one gets bigger the other gets smaller and when one gets smaller the other gets bigger.**

**Link to Constructive and destructive Interference**

<http://earthguide.ucsd.edu/earthguide/diagrams/wave_interference/wave_interference.html>

**Link to Electromagnetic Waves and the relationship between Frequency & Wavelength.**

<http://earthguide.ucsd.edu/eoc/special_topics/teach/sp_climate_change/p_emspectrum_interactive.html>

**Link to the relationship between Energy and its frequency**

<http://amazingspace.org/resources/explorations/light/makewaves-frames.html>

**Link to transverse and longitudinal waves. Notice the impact waves have on particles. Waves transfer energy not matter.**

<https://www.acs.psu.edu/drussell/Demos/waves/wavemotion.html>

**All kinds of wave interactions.**

<https://www.edumedia-sciences.com/en/node/355-waves>