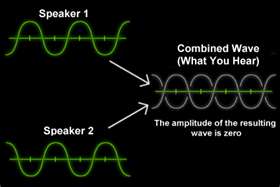
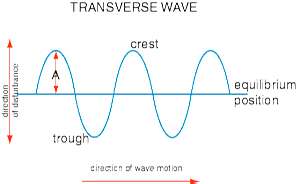
**Integrated Sound Chapter 5**

**p56 listen to both speaker of stereo system with AM radio waves-weeoo sound is great/with one ear toward speaker, move head slowly back and forth/try it with a more normal annoying sound**

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**-transverse waves caused the distorted sounds that you heard as they are easier to visualize**

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**Two people Hold rope to try**

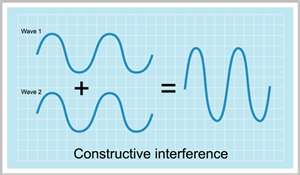
**1.one goes up**

**2.both go up**

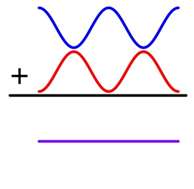
**3.one up and one down**

**Interference-process of waves adding to the largest possible amplitude, canceling to the smallest possible amplitude**

**Constructive interference-two or more waves combine to produce a greater result than the in individual waves**

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**Destructive interference-two or more waves combine to produce a lesser result than the individual waves**

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**-If the total amount of shifts is a wavelength or multiples of a wave length, the two sets of waves will still be in sync(in phase), and they’ll interfere constructively which gives a loud spot**

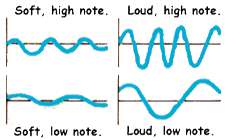
**-if the total amount of shift is a half a wavelength, or odd multiples or half a wavelength, the two sets of waves will be totally out of sync (out of phase) and they will interfere destructively and give a quiet spot**

**-you end up with a pattern of loud-soft-loud ect…due to the sound waves from separate speakers getting in and out of phase because they travel different distances to get to you**

**-spatial pattern-loud and soft spots that move through space around you**

**-the higher the pitch of the annoying hum, the closer together the loud and soft spots in the pattern**

**-the lower the pitch, the farther apart the loud and soft spots are located**

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**-when the sound coming from one speaker is shifted by half a wavelength with respect to the sound from the other speaker, those tow waves are out of sync and create a soft spot**

**-if you move, the sound from the two speakers will shift an entire wavelength with respect to each other and they are back in step which creates a loud spot**

**-with a smaller wavelength, the sound waves from the two speakers get in and out of sync in a shorter distance which means that the loud and soft spots are closer together with higher frequencies**

**p61 electric guitar-mess with the tension of two adjacent strings until they have about the same pitch then pluck them at the same time and look for the wah-wah sound where the sound get s alternately loud and soft**

**p61 rod-suspend one rod from a string and hit the other rod and make the rod spin-listen for the wah-wah sound/change the speed of the spinning rods and compare the wah-wah sounds**

**guitar strings**

**-you have two separate sources of sound so at any point near the strings, you should hear of combination of those two sounds**

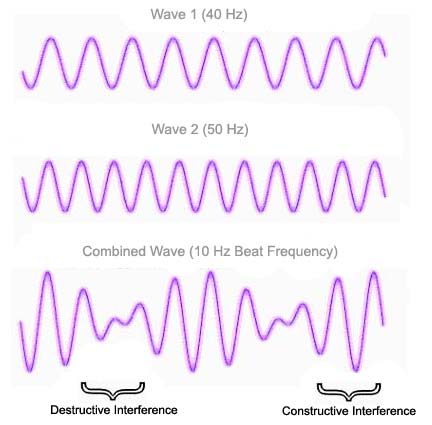
**What you should have heard but didn’t.**

**-the sound waves should add together like the sound waves form the two speakers**

**-you should have detected constructive interference(louder sound), and destructive interference(softer sound)**

**What you heard and why**

**-the guitar strings had slightly different frequencies unlike the boom boxes and they do add and subtract but sound differently**

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**-where the amplitude is small, you get a soft sound, when the amplitude is large, you get a loud sound so you hear the loud and soft which is the wah-wah**

**-temporal sound pattern is created meaning the alternate soft and loud sounds occur in time**

**Beats-the wah-wah effect formed when you add together two waves of slightly different frequency**

**-the closer together in frequency the two sounds, the farther apart the loud and soft spots are in the beats**

**-the closer together the two frequency, the slower the beats**

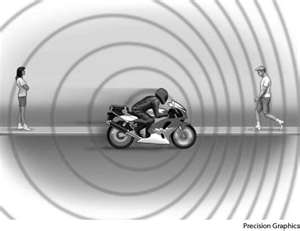
**-as the two frequencies get closer and closer to being the same, the beats become so slow that eventually you don’t even notice them**

**-if the two frequencies are exactly the same, there aren’t any beats at all**

**-try to move the tension around and try it**

**Rod action**

**doppler effect-as the sound source is moving toward you, the sound waves in front of the source bunch up and create a higher frequency sound wave then the source produces**

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**-when the sound is moving away from you, the sound waves behind the source stretch out creating a lower frequency**

**-you then hear a slightly higher frequency sound fromt eh side moving toweard yo and a slightly lower frequency sound the side moving away form you**

**-you have two sound source, each producing a slightly different frequency(beats)**

**-the faster the rod spins, the greater the difference between the two frequencies you hear meaning the beats are faster as the rod spins faster**