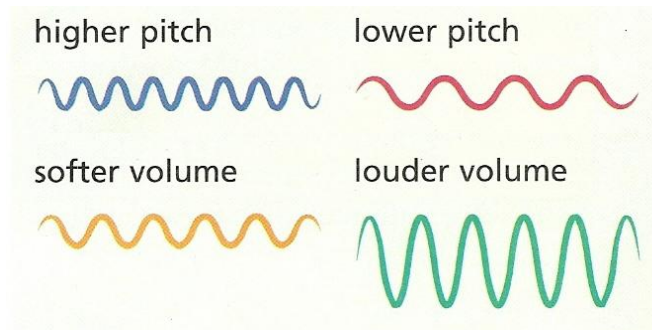


Name: _____

Date: _____

USE OF SOUND

If you think of waves at a beach, sometimes the waves are calm, and do not come in very quickly. Other times there are many waves that constantly come ashore. There are times when the waves are just small ripples, and other times when the waves come in crashing over your head. Well, sound waves can vary just the same as waves in water. The waves change in two ways, pitch and volume.



PITCH

Pitch refers to how high or low a sound is. A flute makes a high pitch sound, where as a tuba makes a low pitch sound. Pitch is measured in “Hertz” (Hz). One hertz means that one sound wave would hit your ear every second. Humans can hear from 20 Hz up to 20 000 Hz.

Have you ever heard of a dog whistle? It is a whistle that “only dogs can hear.” Well, this is not exactly true. Dogs can hear sounds at a much higher pitch than humans, so it is not that only dogs hear it; it is just that we can not. In fact, not only can cats, bats and dolphins all hear dog whistles as well, they can hear sounds that are even higher than what a dog can hear. Bats and dolphins can hear pitches so high that they actually use these high pitch sounds, or “ultrasonic sounds” to navigate when flying or swimming.

Humans can make use of sound waves outside of their hearing level. In medicine, low pitch sounds are used to see a picture of an unborn child inside its mother’s body. High pitch sounds are used to break apart kidney stones so they can be removed more easily.



VOLUME

Volume refers to how loud a sound is. A whisper is not very loud, but a scream is quite loud. Volume is measured in “decibels” (dB). A whisper is about 30 dB, a normal voice is about 60 dB and a scream is about 120 dB.

If a person is around sounds above 90 dB all the time, their hearing can be damaged. If a person hears something over 130 dB their hearing can be damaged right away. So it is very important to protect your ears. You can do this by turning down the volume on your TV, iPod, or other devices used for sound. You can also wear protective equipment, such as earplugs or earmuffs, if you are around loud sounds.

Humans have made several devices to help change the volume of sounds. Doctors use a stethoscope to hear the beating of your heart and a musician will use a microphone to allow his voice to be heard by people too far to hear him without it.

QUESTIONS

1. Explain why a dog may bark, even though you do not hear anything that could be bothering him.

2. Make a list of things you can do to protect your ears.

3. Make a list of things that use sound. When you are done, talk to a partner to add more to your list. If time, keep finding new partners to make your list as big as possible.
