**Sound Waves WebQuest**

**Click on each link to answer the questions about sound waves!**

**Link 1:** [**https://www.nde-ed.org/EducationResources/HighSchool/Sound/vibration.htm**](https://www.nde-ed.org/EducationResources/HighSchool/Sound/vibration.htm)

1. What is a sound?
2. How do sound energy waves move?
3. What is a compression?

What is a rarefraction?

1. Mediums for sound?

What happens in the absence of a medium?

*Navigate to Page 3: The Speed of Sound in Air*

1. During a thunderstorm, lightning and thunder both happen at the same time. Explain why you see lightning before you hear thunder.
2. Explain what is meant by a plane “breaking the sound barrier”.
3. What is an easy way to calculate how far away lightning is during a thunderstorm?

*Navigate to Page 4: The Speed of Sound in Other Materials*

1. Play the animation. Explain why the clanging on the pipes heard before the yell?
2. Explain why the speed of sound is not always the same, include information about molecules and speed.
3. Why is it easier for sound waves to travel through solids, rather than liquids?

*Navigate to Page 5: Temperature and Speed of Sound*

1. What is the relationship between temperature and the speed of sound? Include the concept of molecule vibration in your explanation.

*Navigate to Page 7: The Components of Sound*

1. Sound is a wave and waves have amplitude, explain amplitude and its relation to energy.
2. Explain the relationship between amplitude and intensity.
3. How is intensity measured?
4. What is the difference from a whisper to thunder?
5. What is the threshold of pain?
6. Explain what pitch is and how it works.
7. How are frequencies measured?
8. What is the frequency range of human hearing?
9. Why are humans not able to hear dog whistles?
10. Define ultrasonic:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
11. Explain a use for ultrasonic waves.

**Link 2: Sound Wave Properties**

[**https://javalab.org/en/sound\_wave\_en/**](https://javalab.org/en/sound_wave_en/)

*Make sure that “Listen (Sine Wave)” is checked and turn the volume about half way up*

1. Slide the frequency bar from **0 Hz** to **1000 Hz.** How does the pitch change as you increase the frequency?
2. What is the lowest frequency that you are able to hear? This is the bottom of your hearing threshold and is different for every person!
3. Slide the volume bar from left to right. How does the amplitude of the wave change as you increase the volume?
4. Explain how you control pitches you hear and volumes that you hear.