Name: _____

# Sound Waves

**Learning Objectives:**

- Explore and draw conclusions about the nature, properties and behaviors of sound waves.
- Use the simulation to develop your own definition of frequency and amplitude.
- Describe how frequency and amplitude affect the sounds we hear.
- Given a description of a sound like “high pitched and loud”, describe the amplitude and frequency.

1. Discuss examples of things that make the different types of sounds listed in the table below.
   **Write your examples in the table below.**

2. Open **Sound** simulation from the icon on your computer.
   Use the **Listen to a Single Source** tab. Turn on the **Audio Enabled** so you can hear the sound.

   **Create the sounds in the table below!**

| Sound | Example of something that makes this sound | Explain how you used the simulation to make the right noise | Draw what the sound waves look like in the simulation |
|---|---|---|---|
| **Case A: Loud, High-pitched** | | | |
| **Case B: Soft, High-pitched** | | | |
| **Case C: Loud, Low-pitched** | | | |
| **Case D: Soft, Low-pitched** | | | |

**3.** Which cases in Question #2:

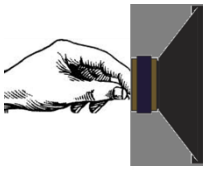
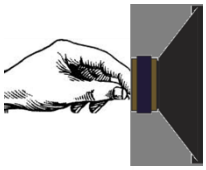
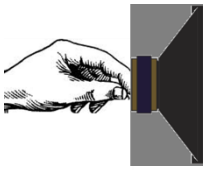
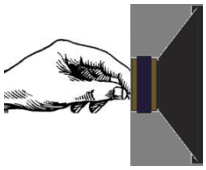
a. Have a high frequency? _____

b. Have a large amplitude?_____

Explain what controls pitch, and what controls loudness.

**4. Creating Sounds …**

- **Compare** how you would have to **move the speaker** to produce the sound in each case.
- **Describe the motions below.**
- Be sure to describe what is different about each one.

| **Sound** | | Is this sound **Low or high pitch? Loud or soft?** |
|---|---|---|
| **Case E: Low Frequency, Low Amplitude** |  | |
| **Case F: High Frequency, Low Amplitude** |  | |
| **Case G: Low Frequency, High Amplitude** |  | |
| **Case H: High Frequency, High Amplitude** |  | |

**5.** **Develop rules** for what effects frequency and what effects amplitude to explain your observations from Question 4.

**6.** Some of your friends are confusing frequency and amplitude. How would you describe these terms in **your own words or pictures** to help your friends understand each one?