Name **ANSWER KEY**

**6.E.1.3 Sound – Study Guide**

**Directions**: Use multiple resources (flexbook, PowerPoints, learning modules, science website, etc.) to complete the graphic organizer on sound.

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| **Sound: Basics**What is sound? ***A compressional wave that travels through air through a series of compressions and rarefactions.***What is the speed of sound? ***About 770 mph***Sound waves are ***longitudinal*** waves.Which is faster (sound/light)?***Light travels faster than sound*** |  **Sound and States of Matter:**Does sound travel faster through a solid, liquid or a gas? ***Solid – liquid - gas***Why is there a difference in speed through different mediums? ***Because they have different densities. More dense means*** ***sound travels faster.***Can you hear sound in space? Explain.***No, because sound is a vacuum and particles are spread too far apart*** |
| **Relationships with Sound:**How is frequency and pitch related?***High frequency = high pitch******Low frequency – low pitch***How is loudness and amplitude related?***Increase in amplitude = loud******Decrease in amplitude = soft*** | **Acoustics**How can you modify an area to reduce echoes?***Place objects in the area to absorb the sound (furniture, curtains, carpet)***Increase loudness? ***Take items out of room or place hard materials to increase echoes & reverberations.*** |
| **Doppler Effect:***Definition*: The change in ***pitch*** due to a moving wave source.Object moving towards you cause ***higher pitched*** sound.Object moving away from you cause ***lower pitched*** sound. | **Echolocation and Sonic Boom:**What is echolocation? ***The use of ultra-sonic sound waves to find prey.***What is sonar? ***A system that uses the reflection of underwater sound waves to detect objects.*** What is a sonic boom? ***The sound made when something breaks the sound barrier (ex. jet)*** |
| **Comparisons:**How are sound, light, and earthquake waves alike?***They all transfer energy.*** | **Resonance:**What is resonance?***The ability of an object to vibrate by absorbing energy at its natural frequency.*** |