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.*** |