

**4**

SCIENCE PARENT GUIDE – UNIT 5

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| ***IMPORTANT CONCEPTS YOUR STUDENT SHOULD KNOW AND ACTIVITIES TO DO AT HOME*** | |
| **SOUND & LIGHT ENERGY** | |
| **DESCRIPTION** | |
| In this unit, students will communicate information about the nature of sound and light. Students will plan and carry out investigations to explain how changing the strength or speed of vibrations affects sound. Students will also design a communication device using sound or light. Additionally, students will carry out investigations to observe how light interacts with various materials. Students will also investigate how light is reflected and refracted. | |
| **KEY WORDS TO KNOW** | |
| * Sound: energy produced from a vibration that you can hear * Speed: how fast or slow something moves * Strength: how strong or weak something is * Vibrations: to shake; back and forth movement * Sound Waves: A moving pattern of high and low pressure that you can hear * Echo: A sound reflection * Pitch: A measure of how high or low a sound is * Frequency: The number of wavelengths that pass through a given point each second * Volume: The amount of space that matter takes up * Decibels: Units used to measure volume of sound | * Transparent: a material that light can pass through * Opaque: a material that light cannot pass through * Translucent: a material that light can pass through but causes the light to diffuse * Energy: Something that can cause change and do work. Light and heat are kinds of energy. * Light: A form of energy that travels in electromagnetic waves, some of which can be seen with the human eye * Mirror: a surface capable of reflecting light to form an image * Reflection: energy waves bouncing off the surface of an object (mirrors or echoes return energy back to the source) * Light: energy from the Sun or a lamp that you can see * Refraction: energy waves that bend (change direction and speed) as they pass from one type of object to another   http://1.bp.blogspot.com/-QOn2S_p5PU8/Vg5eWgC54BI/AAAAAAAAPuU/lQnA-gp1UkM/s640/vocabulary.png |

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| C:\Users\KENNEDY\AppData\Local\Microsoft\Windows\Temporary Internet Files\Content.IE5\QH0NFGU2\idea-azione-motivazione[1].png**Recommended Children’s Literature (Available at your local public library or Amazon).**  *Sound and Light (Hands on Science) by Jack Challoner*  *Sound (Early Bird Energy) by Sally M. Walker*  *Sound (Ways into Science) by Peter Riley*  *Sound and Vibrations (making sense of science) by Peter Riley*  *Sound and Light (Hands on Science)* by Jack Challoner  *Science Files: Light and Sound* by Chris Oxlade  *Eyewitness Guide: 75 Light 1st Edition* by David Burnie  *Light, Sound, and Electricity* by Kristeen Rogers and P. Clarke | | | |
| **SOUND ENERGY** | | | |
| **Important Concepts**  **Addressed in this Unit** | **Sample Problems** | | **How You Can Help Your Student** |
| S4P2. Obtain, evaluate, and communicate information about how sound is produced and changed and how sound and/or light can be used to communicate.  a**. Plan and carry out an investigation** utilizing everyday objects to produce sound and predict the effects of changing the strength or speed of vibrations.  b. **Design and construct a device** to communicate across a distance using light and/or sound.  S4P1. Obtain, evaluate, and communicate information about the nature of light and how light interacts with objects.  a. **Plan and carry out investigations** to observe and record how light interacts with various materials to classify them as opaque, transparent, or translucent.  b. **Plan and carry out investigations** to describe the path light travels from a light source to a mirror and how it is reflected by the mirror using different angles.  c. **Plan and carry out an investigation** utilizing everyday materials to explore examples of when light is refracted.  (Clarification statement: Everyday materials could include prisms, eyeglasses, and a glass of water. | 1. What is sound and how is it useful for communication?  2. What is the relationship between speed at which an object vibrates and the pitch of the sound that is produced?  3. How is sound formed?  4. What happens to sound when the strength or speed of vibrations change?  5. How do different organisms and objects vibrate in order to produce sound? | | **Digital Resources**   * Science Curriculum: STEMscopes via MyBackpack <https://launchpad.classlink.com/atlanta> * Sound Video <http://studyjams.scholastic.com/studyjams/jams/science/energy-light-sound/sound.htm> * Basics of Sound   <http://www.ducksters.com/science/sound101.php>   * Light Video <http://studyjams.scholastic.com/studyjams/jams/science/energy-light-sound/light.htm> * Light Absorption, Reflection, & Refraction <http://studyjams.scholastic.com/studyjams/jams/science/energy-light-sound/light.htm> |
| **Changes to Science Standards: Students are expected to perform the practices while learning the content and understanding the crosscutting concepts.** | | | |
| **Science and Engineering Practices**  Students can use their understanding to investigate the natural world through the practices of science inquiry, or solve meaningful problems through the practices of engineering design.  **Crosscutting Concepts**  Provide students with connections and intellectual tools that are related across the differing areas of disciplinary content and can enrich their application of practices and their understanding of core ideas  **Core Ideas**  Core ideas cover the four domains: physical sciences, earth and space sciences, life science, and engineering and technology. | |  | |