

Your child will soon begin exploring a unit entitled “Waves”. In this unit, students will learn about the science behind wave energy. In addition to the characteristics and properties of waves, students will study mechanical waves such as sound, electromagnetic waves including light, and tools that use light and sound waves. By the end of the unit, students should demonstrate a clear understanding of the unit’s main ideas and should be able to discuss the following topics:

1. Characteristics and properties of all waves
 - Basic Properties – wavelength, frequency, and amplitude
 - Characteristics of Transverse Waves
 - Characteristics of Longitudinal Waves
 - Wave Types (Mechanical and Electromagnetic)

2. Mechanical waves
 - Examples – water, earthquake, sound
 - Pitch and frequency
 - Volume and amplitude
 - Effect of medium on wave speed
 - Tools – sonar, sonogram, echolocation

3. Electromagnetic waves
 - Examples – radio, microwaves, infrared, visible, ultraviolet, x-ray, gamma ray
 - Frequency and photon energy
 - Effect of medium on wave speed
 - Tools – lasers, ultraviolet sterilization, infrared remotes

4. Wave Interactions
 - Reflection
 - Absorption
 - Transmission (Refraction, Diffraction)
 - Doppler Effect

5. Optics
 - Mirrors
 - Lens
 - How the human eye works

Questions to Ask Along the Way

You can help your child learn about these topics by asking interesting questions as he or she progresses through the unit. For example, you may wish to ask your child the following questions:

- How is a sound wave different from a light wave? How are they alike?
- Why does loud music damage your hearing?
- Can all animals hear the same range of sound?

- Why do musicians tune their instruments?
- How are rainbows created?
- How does the human eye see color?
- How do eyeglasses correct vision problems?
- What are some examples of light tools or sound tools?

Thanks for working with your child to explore the nature of science and build understanding.