

# Table of Activities

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## Part 1: What Is Sound? (2 sessions)

Students begin their explorations of waves and sound with demonstrations and activities intended to stimulate curiosity and generate questions about sound.

### Activity 1A: Sounds All Around (1 session)

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Students are introduced to the unit and the unit project.

### Activity 1B: Sound—From Production to Perception (1 session)

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Students “dissect” and experiment with a speaker to see firsthand how these devices convert electrical impulses into physical vibrations, and they learn how these vibrations are perceived by the ear.

## Part 2: Exploring Waves (5 sessions)

Students explore the properties of waves, such as wavelength, frequency, amplitude, and speed, and behaviors of waves, such as reflection, diffraction, and interference.

### Activity 2A: Where Does Sound Go? (1 session)

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Students investigate the behavior of water waves as a model for the behavior of sound waves. They share their observations about waves and learn the scientific terms to use to describe these observations. They consider how these behaviors influence the placement of audio equipment and the design of recording studios and live performance venues.

### Activity 2B: The Speed of Sound (2 sessions)

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Students learn what factors affect the speed of sound and conduct an investigation in which they measure the speed of sound in air.

### Activity 2C: Making Waves (2 sessions)

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Students use Slinkys to explore the properties of mechanical waves, creating and observing both longitudinal and transverse waves. Students learn how to use the equation that quantifies the relationship between frequency, wavelength, and wave speed.

## Part 3: Acoustics in Action (3 sessions)

Students use sound editing software and their knowledge of sound waves to create a sound effect. They apply what they have learned in this unit by writing an article for a classwide *Acoustipedia*.

### Activity 3A: Sound Editing Software (1.5 sessions)

<b>3A.1:</b> <i>Seeing Sound Waves</i>	Students use sound editing software to explore the relationship between a wave's properties and how the wave sounds.
<b>3A.2:</b> <i>A Sound of Your Own</i>	Students use a sound editing program to produce a sound effect for a media and digital design project. They write a concise explanation, in scientific terms, of how they manipulated wave properties to produce this effect.

### Activity 3B: The Science of Sound (1.5 sessions)

Students write articles, with labeled illustrations, on topics related to sound and audio production. Students' articles are combined into a mini-encyclopedia, the *Acoustipedia*, that all students can refer to when working on media and digital design projects.