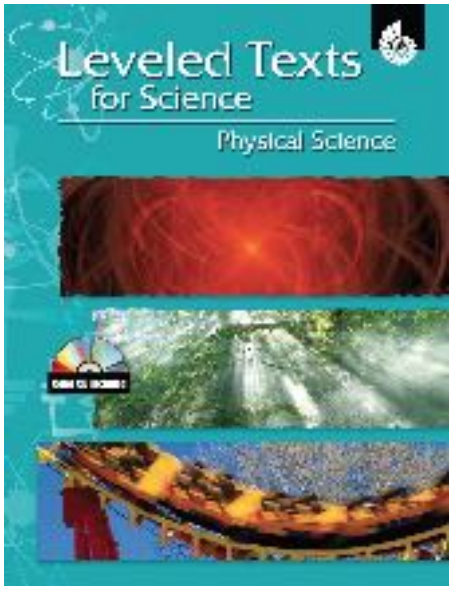
SHELL EDUCATION

Sample Pages from

Leveled Texts for Science: Physical Science



The following sample pages are included in this download:

- Table of Contents
- Readability Chart
- Sample Passage

For correlations to Common Core and State Standards, please visit http://www.teachercreatedmaterials.com/correlations.

Table of Contents

How to Use This Product

Readability Chart

Title of the Text	Star	Circle	Square	Triangle
Atoms	2.2	3.0	5.1	6.5
Elements, Molecules, and Mixtures	2.2	3.4	5.0	7.1
States of Matter	2.1	3.3	5.2	6.5
The Periodic Table	2.2	3.2	5.2	6.5
Chemical Reactions	2.0	3.5	5.1	6.5
Energy	2.2	3.5	4.5	6.5
Heat	1.8	3.5	4.5	6.5
Sunlight	1.5	3.4	4.8	6.6
Electrical Circuits	1.7	3.5	4.6	6.9
Vibrations	2.1	3.5	4.5	6.5
Radiant Light	2.2	3.2	5.0	6.5
Gravity	2.2	3.1	4.5	6.6
Relativity	2.2	3.0	4.9	6.5
Electromagnetism	2.2	3.5	5.2	6.7
Newton's Laws of Motion	2.0	3.4	4.6	6.5

Components of the Product

Primary Sources

- Each level of text includes multiple primary sources. These documents, photographs, and illustrations add interest to the texts. The scientific images also serve as visual support for second language learners. They make the texts more context rich and bring the texts to life.

Vibrations

Put your fingers on your throat. Hum. What do you feel? Your can feel vibrations in your throat. When you use your voice your body makes noise. Your voice box vibrates.

Sound comes from vibrations (vie-BRAY-shuns). The atoms in the air are always moving. They can move in a pattern. That creates waves. The waves move through matter. They cause vibrations. The vibrations are picked up by our ears. Our brain turns them into sounds that we hear.

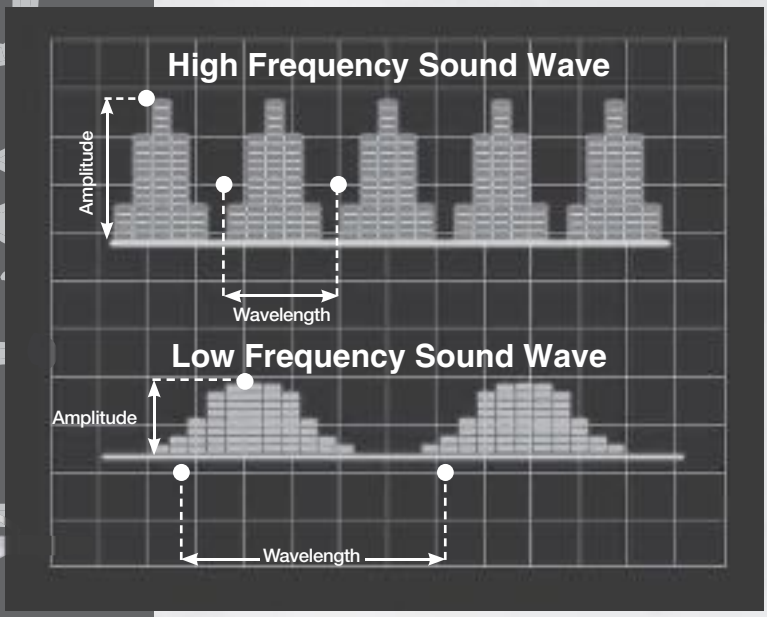
the voice box

Sound Waves

Sounds waves are compression (KOM-presh-un) waves. They are made of moving atoms. Those atoms get pushed by other atoms.

Think of a big movie blast. It starts small. It pushes outwards. It pushes the air around it further out. That air pushes more air. A sound wave is just like that. It is a vibration of atoms. They push other atoms. The other atoms vibrate the same way as the first atoms.

Not all sound waves are alike. One sound wave makes one sound. Another sound wave makes another sound. Sound waves differ in the three ways:



- Wavelength is the length from wave to wave.
- Amplitude is the strength of the sound wave. This makes the sound loud or soft. When a wave is strong, the sound is loud. The amplitude is large. When a wave is weak, the sound is soft. The amplitude is small.
- Frequency is the speed of the wave. It counts the number of vibrations each second. The brain turns frequency into pitch. Fast vibrations sound high. Slower vibrations sound low. A tweeting bird makes a high sound. A roaring lion makes a low sound.

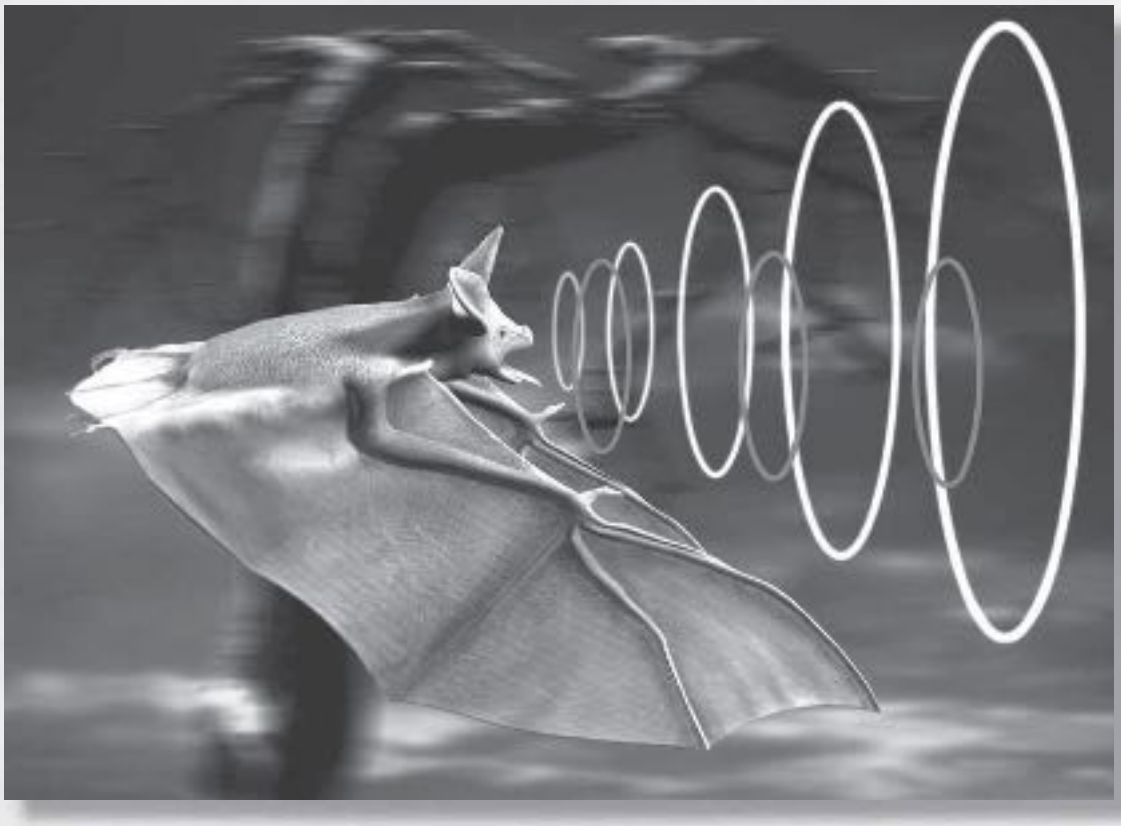
The Speed of Sound

Sound waves pass through everything. They go through gas like the air. They go through liquid like the ocean. They even go through solids like the ground. The atoms vibrate along with the sound wave. The speed of sound changes when it goes through different things. Sound waves move:

- slowly through gases.
- more quickly through liquids.
- fastest through solids.

Heat also affects the speed of moving sound waves. Hot things let sound move faster.

Sound travels about 343 meters (1,125 feet) per second. That is like traveling 1,217 kilometers (756 miles) per hour!



Bats use sound to sense the world around them.

Comprehension Question

What is sound?

Vibrations

the voice box

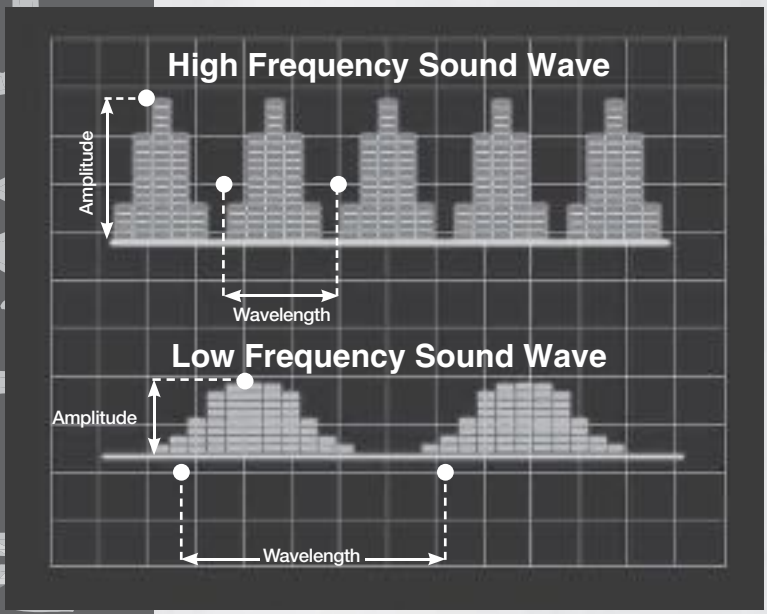
Put your fingers on your throat and hum. What do you feel? Your can feel vibrations in your throat when you use your voice. This is because your body makes noise–your voice–by vibrating your voice box.

Sound comes from vibrations. The atoms and molecules that make up the air are always moving. When they move in a pattern, it creates waves. As the waves move through matter, they cause vibrations. The vibrations are picked up by the ear and sent as messages to the brain. The brain turns them into the sounds we hear.

Sound Waves

Sounds waves are compression (KOM-presh-un) waves. That means that they are made of atoms being pushed, or compressed, by other atoms. Think of a big movie explosion. It starts small, but it pushes outwards. That pushes the air around it further out. That air pushes more air. A sound wave is just like that. It is a vibration of atoms pushing more atoms to vibrate the same way.

Not all sound waves are alike. The differences let us hear various sounds. Scientists have discovered that sounds and sound waves differ in the following ways:



- Wavelength is the length from wave to wave.
- Amplitude is measured in the height of the sound wave. It relates to the loudness or softness of a sound. When a wave is high, the sound is loud. The amplitude is large. When a wave is low, the sound is soft. The amplitude is small.
- Frequency of sound relates to speed. The number of vibrations per second is the frequency. The brain turns frequency into pitch. Fast vibrations cause high pitch. Slower vibrations make lower-pitched sounds. A tweeting bird makes a high-pitched sound. A roaring lion makes a low-pitched sound.

The Speed of Sound

Sound waves pass through everything. They go through gases like the air. They go through liquid like the ocean. They even go through solids like the ground. The atoms vibrate along with the sound wave. The speed of sound changes when it goes through different things. Sound waves move:

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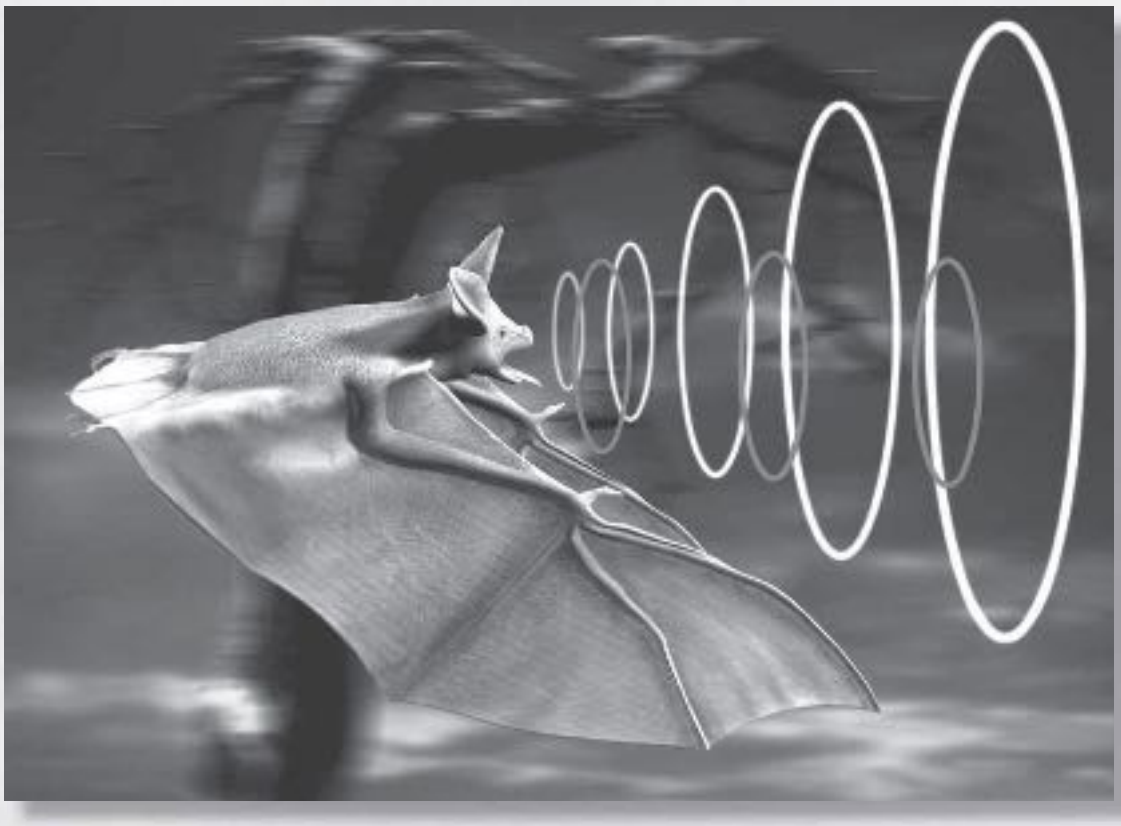

Bats use sound to sense the world around them.

Comprehension Question

How are vibrations and sound related?

Vibrations

Put your fingers on your throat and hum. What do you feel? Your can feel vibrations in your throat when you use your voice. This is because your body makes noise–your voice–by vibrating membranes in your voice box.

Sound comes from vibrations. The atoms and molecules that make up the air are always moving. When they move in a pattern, it creates waves. As the waves move through matter, they cause vibrations. The vibrations are picked up by the ear and sent as impulses to the brain. The brain translates them as the sounds we hear.

the voice box

Sound Waves

Sounds waves are compression (KOM-presh-un) waves. That means that they are made of atoms being pushed, or compressed, by other atoms. Think of a big movie explosion. It starts small, but it pushes outwards. That pushes the air around it further out. That air pushes more air. A sound wave is just like that. It is a vibration of atoms pushing more atoms to vibrate the same way.

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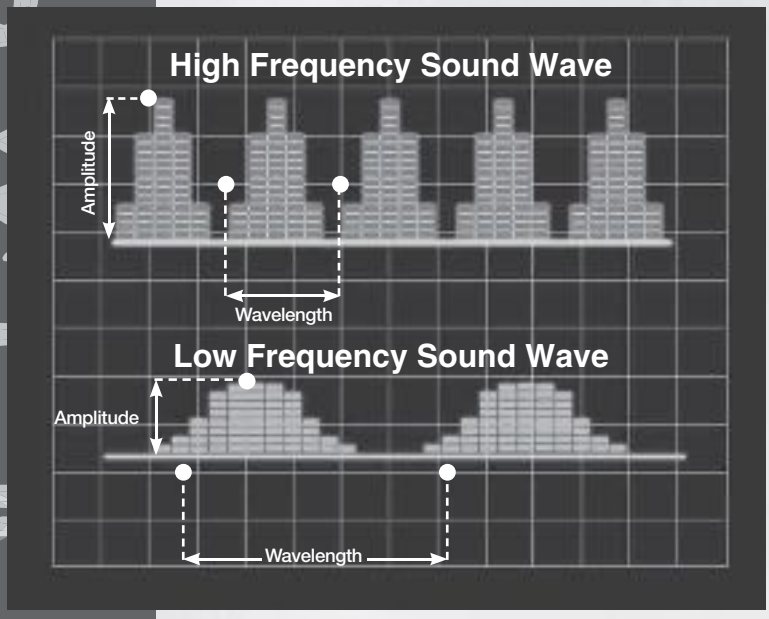


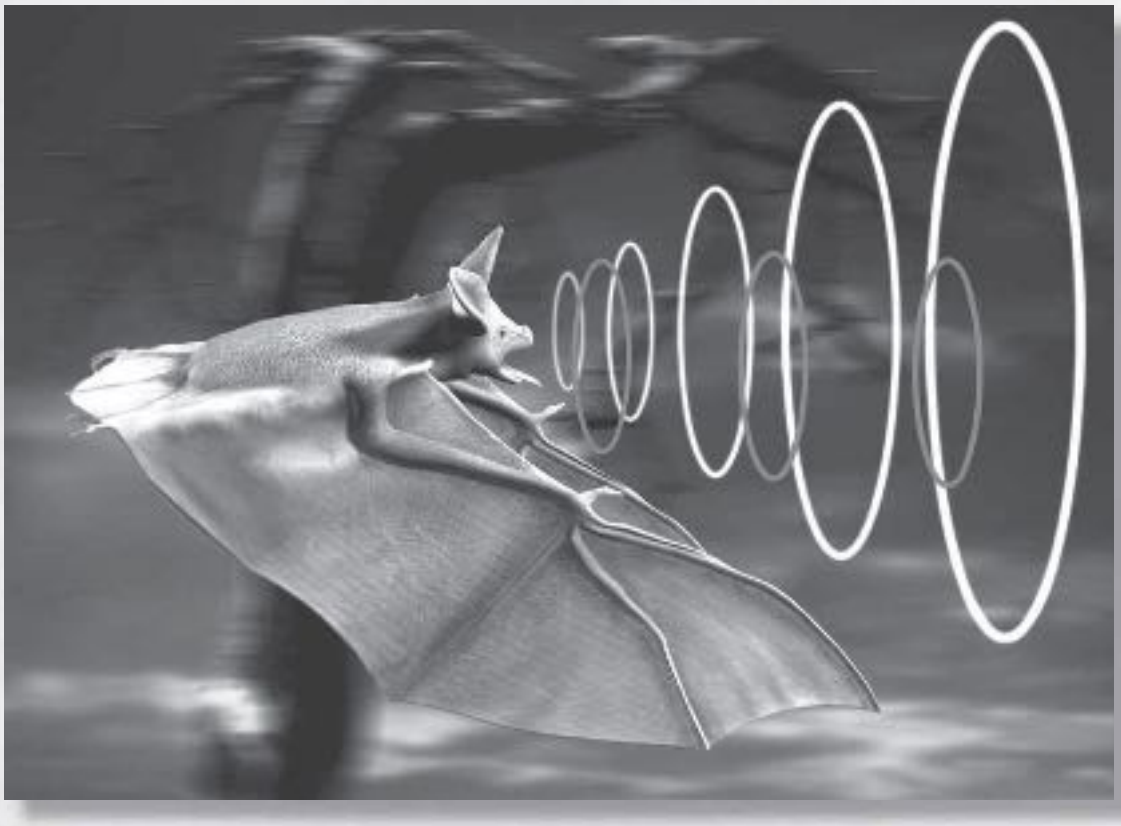
- Wavelength is the distance between the troughs on either side of a single wave.
- Amplitude is measured in the height of the sound wave. It relates to loudness or softness of a sound. When a wave is high, the sound is loud and the amplitude is large. When a wave is low, the amplitude is small and the sound is soft.
- Frequency of sound relates to speed. The number of vibrations per second is the frequency. The brain understands frequency as pitch. Fast vibrations cause high pitch. Slower vibrations make lower-pitched sounds. A tweeting bird makes a high-pitched sound. A roaring lion makes a low-pitched sound.

The Speed of Sound

Sound waves pass through all forms of matter. These include gas, liquid, and solid. The atoms vibrate because of the sound wave's vibrations. The speed of sound changes as the waves pass these different states of matter. Sound waves move:

- slowly through gases.
- more quickly through liquids.
- fastest through solids.

Temperature also affects the speed of moving sound waves. Higher temperatures cause sound to move faster. At normal room temperatures, sound travels about 343 meters (1,125 feet) per second. That is like traveling 1,217 kilometers (756 miles) per hour!



Bats use sound to sense the world around them.

Comprehension Question

What are a sound wave's wavelength, amplitude, and frequency?

Vibrations

When you put your fingers on your throat and hum, what do you feel? Your throat vibrates whenever you use your voice. In order to make noise, your body vibrates membranes in a special organ called the voice box.

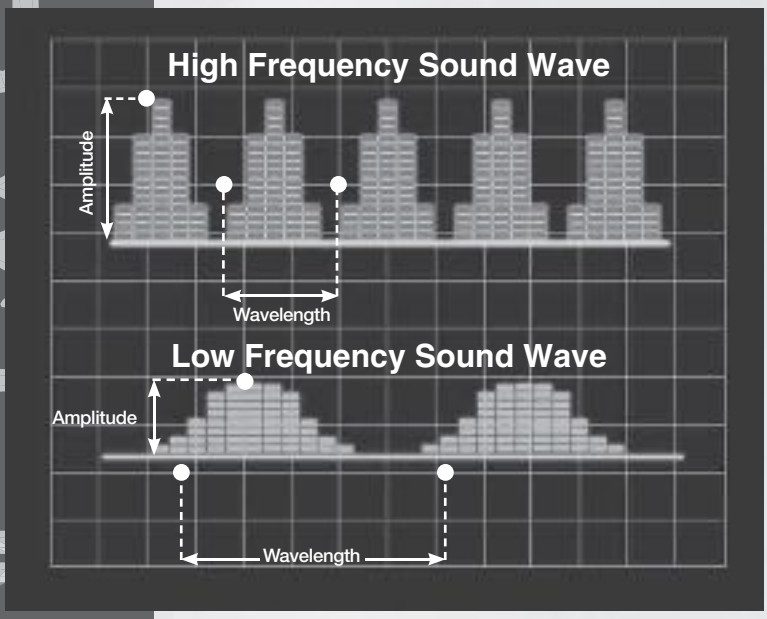
Sound is vibrations. The atoms and molecules of the air are always moving, and when they move in a pattern, they create waves. As the waves move through matter, they cause vibrations. The vibrations are picked up by the ear and transmitted as impulses to the brain, which translates them into the sounds we hear.

the voice box

Sound Waves

Sounds waves are compression (KOM-presh-un) waves: they are made of waves of atoms being compressed by other atoms. Like a big movie explosion, it may start small, but it pushes outwards. That pushes the air around it further out, and that air pushes more air. A sound wave is a vibration of atoms pushing more atoms to vibrate the same way.

Different sound waves create different sounds. Scientists have discovered that sounds and sound waves differ in the following ways:



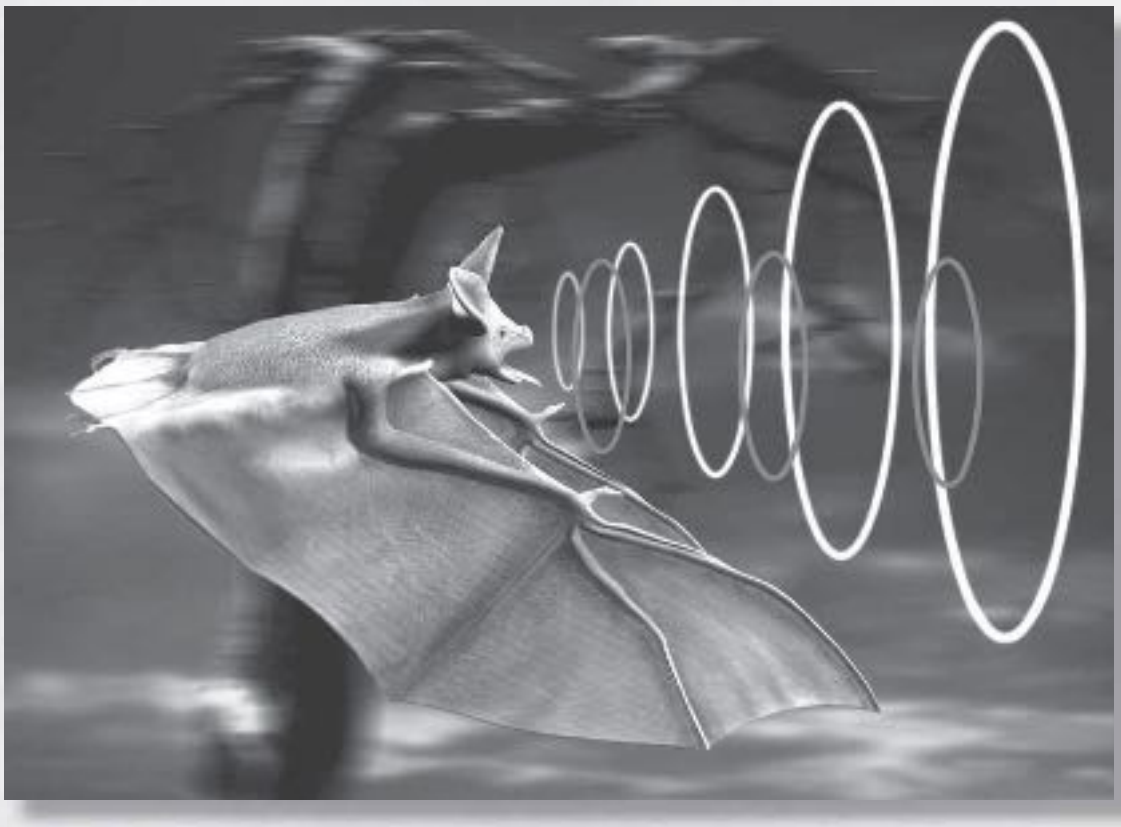
- Wavelength is the distance between the each wave of vibrating atoms.
- Amplitude is the height of the sound wave. It determines the loudness or softness of the sound. When a wave is high, the sound is loud and the amplitude is large. When a wave is low, the amplitude is small and the sound is soft.
- Frequency of sound is the speed of the wave: the number of vibrations per second. The brain understands frequency as pitch. Fast vibrations cause high pitch. Slower vibrations make lower-pitched sounds. A tweeting bird makes a high-pitched sound. A roaring lion makes a low-pitched sound.

The Speed of Sound

The vibrations of sound waves penetrate all states of matter, including gas, liquid, and solid. No matter what state they are in, the atoms still vibrate because of the sound wave's vibrations. However, the speed of sound changes as it penetrates different states of matter. Sound waves move:

- slowly through gases.
- more quickly through liquids.
- fastest through solids.

Temperature also affects the speed of moving sound waves. Higher temperatures cause sound to move faster. At normal room temperatures, sound travels about 343 meters (1,125 feet) per second. That is like traveling 1,217 kilometers (756 miles) per hour!



Bats use sound to sense the world around them.

Comprehension Question

Describe how sound waves are related to vibrations.