

Pluto, Once a Planet

Fill in the circle to complete the sentence. Then answer questions 3, 4, and 5.

1. The Kuiper Belt is _____.
Ⓐ eight planets
Ⓑ a ring of icy objects
Ⓒ a mathematical model
2. In 2006, Pluto _____.
Ⓐ changed its orbit
Ⓑ shrunk in size
Ⓒ became a dwarf planet
3. Compare the size of Earth's orbit around the sun with that of a possible new planet nicknamed Planet Nine.

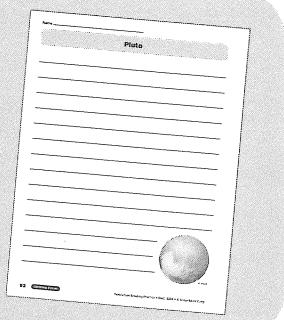
4. In your mind, which reason is the strongest one for not calling Pluto a planet anymore?

5. Why do you think scientists make new definitions for objects in space?

Write About the Topic

Use the Writing Form to write about what you read.

Imagine you are a scientist who has found a new ninth planet. Describe your discovery in your science blog.



Protecting Your Hearing

Level 1

Words to Know list, Reading Selection, and Reading Comprehension questions

Listen Up!

Fill in the circle to complete the sentence.

The human ear has three different parts. The outer part is the part you can see. The middle and inner ear are inside your head. That doesn't mean these parts can't hear. They can! Loud noises can damage your hearing. Loud noises are sometimes called noise pollution.

Sounds are measured in decibels. A whisper is 30 decibels. A rock concert is above 60. A subway train and a car are about 80 decibels. A rock concert can be 90 decibels. So can a lawn mower. A rock concert is 120 decibels. A horn from a sound system or a subway train can be 130 decibels.

Workers have to protect people's hearing. Engineers can protect the hearing of people who work in noisy places. Machinery makers can make machinery quieter. Architects can plan buildings that have safe decibel levels for workers.

You can protect your hearing too. You can cover your ears. You can turn down the sound. Covering your ears when you're near a noisy place could help. Quickly walking away from loud noises can help, too. The less noise you hear, the better.

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Protecting Your Hearing

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Level 2

Words to Know list, Reading Selection, and Reading Comprehension questions

Can You Hear Me Now?

Fill in the circle to complete the sentence.

Hearing is most important than you might think. Hearing the tone of a horn may warn of danger. Hearing an alarm may tell you it's time to get up. Hearing a teacher's voice may help you learn. Sound can travel through air and can spread a big noise across your face.

Sounds are made when things vibrate or move back and forth. The outer ear moves back and forth. The pinna collects sound and funnels them to the middle ear. The middle ear is a stretched-out piece of skin that separates the outer ear from the middle ear. When sound waves enter the outer ear, they hit the tiny bones called the ossicles. These vibrations pass through the ossicles to the eardrum. The eardrum vibrates. They are the smallest bone in the human body. They make the sounds heard.

The sounds then pass into the inner ear. This is a tube that looks like a shell, called the cochlea. It is filled with liquid. Sounds pass through the fluid. They move the thousands of tiny hair cells there. These hairs send signals to the brain. Teachers figure out what the sounds mean.

These sounds can hurt the tiny hair cells in your ears. Listening to loud music with headphones can harm those hair cells. Even the sound of a jackhammer or a jet can be harmful. Doctors say that you should never play with fireworks when you're near loud noises can help. Moving away from loud noises when you're listening to music or playing helps to protect your hearing. Hearing is important. Remember to protect your hearing.

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Protecting Your Hearing

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Level 3

Words to Know list, Reading Selection, and Reading Comprehension questions

Good Vibrations

Fill in the circle to complete the sentence.

Sound affects our lives in many ways every day. Most people are able to hear sounds that are high in tone, louder in pitch. They can hear the high notes of a flute and the low notes of a tuba. They can hear the loud sound of a jackhammer and the soft sound of a kitten's purr. Sound can travel when something vibrates. The vibrations travel through the air in sound waves. The sound waves hit the eardrum in the pinna, and pass down through the ear canal toward the middle ear. The ossicles vibrate to move the eardrum. The vibration sends the sound waves to the brain. The brain figures out what the sound means.

Sound waves—like the hammer—travel through the air in sound waves. The sound waves hit the eardrum in the pinna, and pass down through the ear canal toward the middle ear. The ossicles vibrate to move the eardrum. The vibration sends the sound waves to the brain. The brain figures out what the sound means.

The sound between the lowest sound a person can hear and the highest sound a person can hear is called the range of hearing. A number of things can cause hearing damage. Injuries to the ear can damage your hearing. The roar of a jet engine or the roar of a rock concert can break your eardrum.

To keep a wide hearing range, protect your ears. Don't play with fireworks when you're near them. Turn down the volume when you're listening to music. Turn down the volume when you're watching television. Keep those high notes and low notes ringing in your ears so you can hear the way we're trying to hear.

Emergency vehicles use loud sirens to alert drivers when an accident occurs.

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Assemble the Unit

Reproduce and distribute one copy for each student:

- Visual Literacy page: Diagram of the Human Ear, page 101
- Level 1, 2, or 3 Reading Selection and Reading Comprehension page and the corresponding Words to Know list
- Graphic Organizer of your choosing, provided on pages 180–186
- Writing Form: Hearing Sounds, page 102

Introduce the Topic

Review the diagram of the ear with students. Explain that important parts of the ear are protected inside the head. However, loud noises can cause people to lose some of their hearing.

Read and Respond

Form leveled groups and review the Words to Know lists with each group of students. Instruct each group to read their selection individually, in pairs, or as a group. Have students complete the Reading Comprehension page for their selection.

Write About the Topic

Read aloud the leveled writing prompt for each group. Tell students to use the Graphic Organizer to plan their writing. Direct students to use their Writing Form to respond to their prompt.

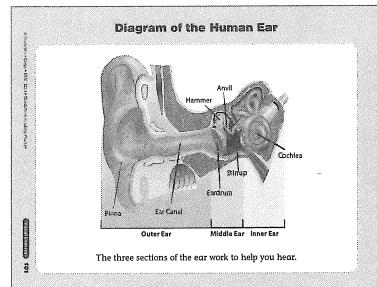


Diagram of the Human Ear

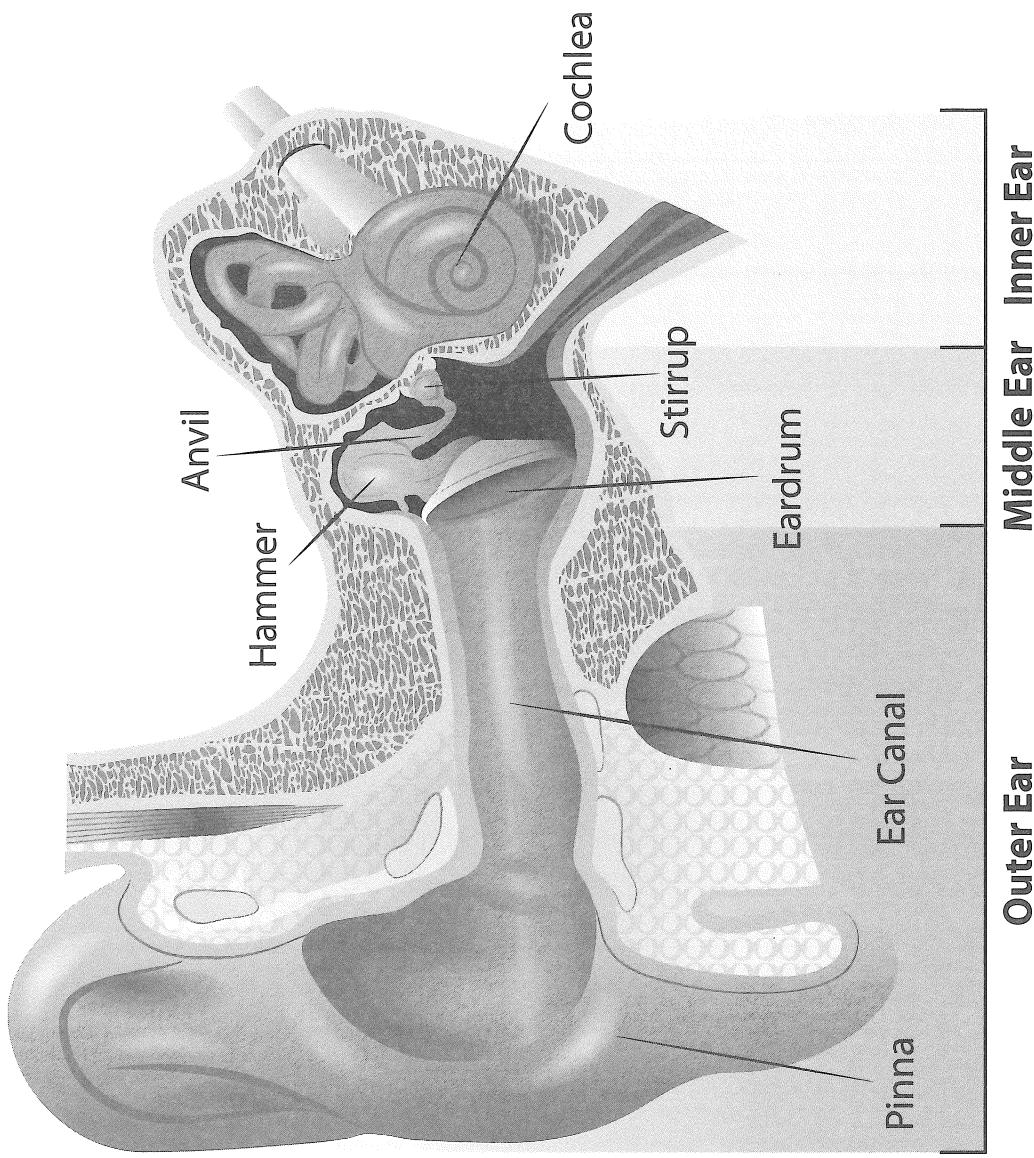
Hearing Sounds

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Writing Form

Diagram of the Human Ear



The three sections of the ear work to help you hear.

Hearing Sounds

A black and white photograph of a young boy with dark hair, wearing a striped polo shirt. He is smiling broadly and has his hands raised to his head, adjusting a pair of over-ear headphones. The background is plain white.



Words to Know

Listen Up!

human
outer ear
middle ear
inner ear
pollution
decibels
protect
earplugs
earmuffs
machinery
machines
levels

Protecting Your Hearing



Words to Know

Can You Hear Me Now?

alarm
vibrate
outer ear
pinna
funnels
middle ear
eardrum
separates
anvil
stirrup
inner ear
cochlea
liquid
pulse
signals
concerts
protect

Protecting Your Hearing

Words to Know

Good Vibrations

affects
vibrates
vibrations
outer ear
pinna
ear canal
middle ear
eardrum
anvil
stirrup
spiral
cochlea
fluid
range
damaged
protect
television

Protecting Your Hearing



Listen Up!

The human ear has three different sections. The outer ear is the part you can see. The middle ear and inner ear are inside your head. That doesn't mean those parts can't be hurt. They can be harmed by loud noises. Loud noises are sometimes called noise pollution.

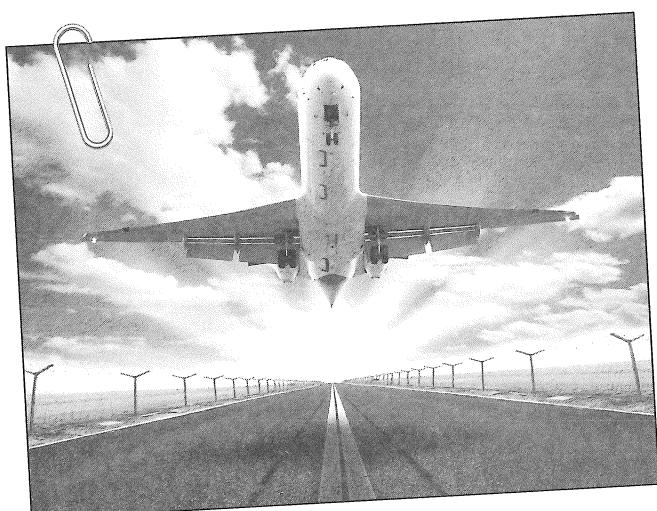
Sounds are measured in decibels. A whisper is 30 decibels. A friend talking is about 60. A baby screaming can be 90 decibels. So can a lawn mower. A rock concert can be 120 decibels. A jet can, too. Any sound above 85 decibels can harm a person's hearing.

All people lose some hearing as they grow older. Some people lose more than others. Those who listen to loud music may have more hearing loss. Those who work around loud things such as subway trains and jets may, too.

What can be done to protect people's hearing? Earplugs or earmuffs can protect the hearing of people who work in noisy places. Machinery makers can make machines that are less noisy. Builders can plan buildings that have safe decibel levels for workers.



Wear ear protection when working around noisy machinery.



The sound of a jet taking off is about 120 decibels.

You can protect your hearing, too. You can turn down the sound. Covering your ears when you are near a loud noise can help. Quickly walking away from loud noises can help, too. The less noise pollution a person hears, the better!

Listen Up!

Fill in the circle to complete the sentence. Then answer questions 3, 4, and 5.

1. A decibel is _____.
Ⓐ part of the inner ear
Ⓑ a loud noise
Ⓒ a unit of measurement
2. People who work in noisy places can protect their hearing by _____.
Ⓐ turning down the sound
Ⓑ wearing earplugs or earmuffs
Ⓒ working outside
3. What is the author's purpose in writing this text?

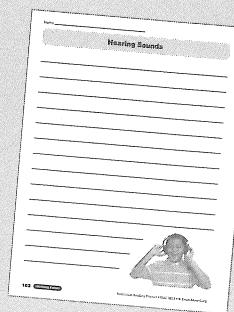
4. What is the main idea of paragraph 5?

5. What will you do in the future to protect your hearing?

Write About the Topic

Use the Writing Form to write about what you read.

Make a list of the sounds you hear in the next ten minutes. Rate them for hearing safety.



Can You Hear Me Now?

Hearing is more important than you might think. Hearing the toot of a horn may warn of danger. Hearing an alarm ring may tell you it's time to get up. Hearing your teacher say "Lunchtime!" can spread a big smile across your face.

Sounds are made when things vibrate, or move back and forth quickly. The outer ear is the pinna. The pinna collects sounds and funnels them to the middle ear.

The eardrum is a flat, stretched-out piece of skin that separates the outer ear from the middle ear. When sounds hit the eardrum, it vibrates. These vibrations pass along to three tiny bones called the hammer, the anvil, and the stirrup. They are the smallest bones in the human body. They make the sounds louder.

The sounds then pass into the inner ear through a tube that looks like a shell, called the cochlea. It is filled with liquid. Sounds pulse through this liquid. They move the thousands of tiny hair-like cells there. These hairs send signals to the brain. The brain figures out what the sounds mean.



The pinna is the outer part of the ear that you can see.



Musical instruments vibrate to make sounds. Some have parts that you can see vibrating.

Loud sounds can hurt the tiny hairs inside your ears. Listening to loud music with headphones can harm those hairs. Going to rock concerts can, too. Even the sounds of a jackhammer or a jet can hurt your hearing if you stand too close. Covering your ears when you are near loud noises can help. Moving away from loud noises can, too. Wearing earplugs helps to protect your hearing. Hearing is important, so remember to protect your ears.

Can You Hear Me Now?

Fill in the circle to complete the sentence. Then answer questions 3, 4, and 5.

1. The eardrum _____.

- (A) collects the sounds around you
- (B) vibrates when sound waves reach it
- (C) is filled with liquid that pulses with sound

2. Hearing can be hurt by _____.

- (A) going to rock concerts
- (B) moving away from a jackhammer
- (C) covering your ears when you hear a loud noise

3. Where are the tiniest bones in the human body? Explain what they do.

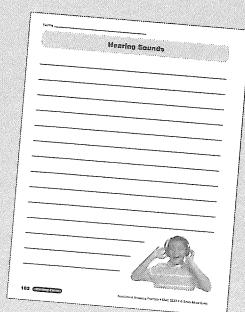
4. Give your own example of an occasion when hearing is especially important.

5. What will you do in the future to protect your hearing?

Write About the Topic

Use the Writing Form to write about what you read.

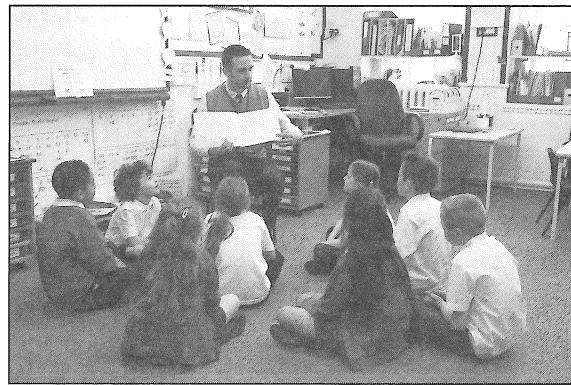
List three musical instruments. Choose one and explain how it produces vibrations to make musical sounds.



Good Vibrations

Sound affects our lives in many ways every day. Most people are able to hear sounds that are high or low, loud or soft. They can hear the high notes of a flute and the low notes of a tuba. They can hear the loud sound of a siren and the soft sound of a kitten's purr.

Sound is created when something vibrates. The vibrations travel through the air in sound waves. Sound waves hit the outer ear, called the pinna, and sweep down through the ear canal toward the middle ear. They hit the eardrum, causing it to vibrate. The eardrum's vibration sends the sound to three tiny bones.



The students sit near their teacher while he reads aloud to them.

These tiny bones—the hammer, anvil, and stirrup—make the sound louder. They pass the sound to a spiral tube, the cochlea. This tube looks like a shell. It is filled with fluid and tiny hair-like cells. The sound waves make the fluid move, which moves the hairs. The hairs send a message to the brain, which figures out whether the sound is a flute, a tuba, a siren, or a purr.

The difference between the lowest sound a person can hear and the highest sound is called the hearing range. When hearing is damaged, the highest sounds in the range are lost first. A number of things can cause hearing loss. Sounds louder than a ringing telephone can damage hearing. The roar of a jet and the roar of a rock concert can both do damage.



Emergency vehicles use loud sirens to clear the way on busy streets.

To keep a wide hearing range, protect your ears. Don't play loud music through headphones, limit rock concerts, and turn down the television. Keep those high notes and low notes ringing as long as you can!