Sound of Science
Ear Worksheet

Grades 3-5

Students will learn the anatomy of the ear and how vibrations (sound waves) are converted into electrical impulses and sent to the brain.

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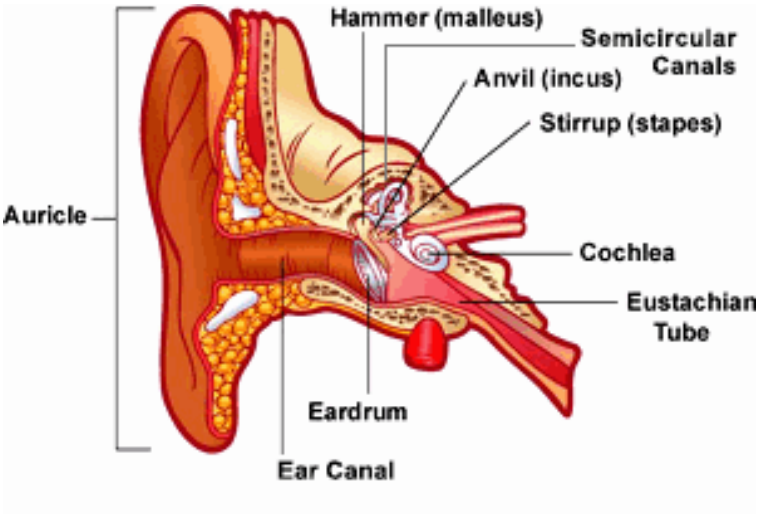


Fun Facts!

The fluid in the cochlea helps us keep our balance. If the fluid is blocked we feel dizzy.

Ear wax protects and helps clean the ear and keeps bad things out.

Two parts of the body are needed to hear sound, the ear and the brain.

In addition to the outer ear, what are the other two sections of the ear? _____ & _____.

What is the name of the outer part of the ear that catches sound waves like a funnel?

A. The tentacle
B. The clavicle
C. The popsicle
D. The auricle
E. The unicycle

What is the name of the thin stretched membrane (skin) that divides the outer ear from the middle ear?

What are the nicknames of the three tiny bones in the middle ear that are vibrated with sound waves hit the eardrum? _____

Inside the inner ear is a tiny fluid-filled tiny tube called the _____.

The cochlea is lined with tiny hairs called _____.

TRUE OR FALSE:
The Erie Canal is shaped like a giant ear. _____

Sound of Science

Sound Waves Worksheet

Grades 3-5

Students will learn that sound is energy that travels in waves caused by vibrations. Students will also learn ways to measure sounds waves including frequency (pitch) and amplitude (volume).

What are two ways to measure a sound wave?

If sound waves are close together is the pitch higher or lower? _____

Does the height of a sound wave affect loudness or pitch? _____

What is amplitude? _____

What is frequency? _____

If you visit your grandma with high frequency do you visit her often or rarely?

What has higher amplitude, thunder or raindrops?

Which animal sound has a higher frequency, a bird's whistle or a lion's roar?

Which character's voice has a lower frequency, Princess Leia or Darth Vader?

Draw a sound wave with low frequency and a high amplitude:

TRUE OR FALSE:
John Frequency Adams was the sixth President of the United States. _____

Fun Facts!

Sound waves travel through matter (solid, liquid or gas). Sound waves can't travel in a vacuum so outer space is totally silent.

You cannot see sound waves, but if they have high amplitude and low frequency (fireworks, loud drums and thunder) you can feel them in your chest.

Sound of Science
Matter Worksheet

Grades 3-5

Students will learn about matter, atom, protons, neutrons and electrons.

Introduction
Matter is everything that has mass and takes up space. Your desk, the air, even you are made of matter. All matter is made up of atoms that are so small we can't see them with the naked eye.

What is matter? _____
_____

All matter is made up of tiny invisible particles called _____.

What do scientists use to view atoms and particles?_____.

What are the three parts that make up an atom?

1. _____

2. _____

3. _____

Fun Facts!

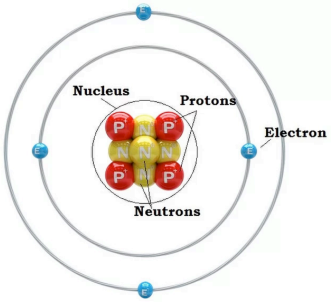
Your body is made up of billions and billions of atoms.

Atoms are the building blocks of life.

Protons are too tiny to see with the naked eye but they are more than 1,800 times as large as an electron.

Match the following words by connecting them with a line:

NEUTRON	POSITIVE
PROTON	NEUTRAL
ELECTRON	NEGATIVE



TRUE OR FALSE:
John Atoms won the Presidential electron and was the second President of the United States.
_____

Sound of Science
Ear Worksheet

Grades K-2

Students will basic anatomy of the ear and how the ear works.

Draw a person's head with very large ears:

Fun Facts!

Ear wax protects and helps clean the ear and keeps bad things out.

Two parts of the body are needed to hear sound, the ear and the brain.

What is an eardrum? Circle the correct answer below:

A. A drum shaped like an ear.
B. A drum you play by hopping on one foot and banging your ear against it.
C. The thin stretched piece of skin (membrane) that divides the outer ear from the middle ear.

Humans have five senses. Draw a line connecting the sense with the correct organ:

SENSE: Smell	Taste	Sound	Touch	Sight
ORGAN: Mouth	Nose	Eyes	Skin	Ears

TRUE OR FALSE:
If you have ears of corn you will have trouble hearing. _____

Draw a picture of a person with ears made of corn instead of normal ears.

Sound of Science

Sound Waves Worksheet

Grades K-2

Students will learn that sound is energy that travels in waves caused by vibrations. Students will also learn ways to measure sounds waves including frequency (pitch) and amplitude (loudness).

Draw a picture of a tall sound wave and a short sound wave. Which sound wave is louder?

_____

Draw a picture of sound waves close together:

_____

Draw a picture of sound waves far apart:

_____

Try making a variety of high pitched, low pitched and loud and quiet sounds.

When sound waves are close together, is the pitch higher or lower? _____

Which animal sound has a higher pitch, a bird's whistle or a lion's roar? _____

Which character's voice has a lower pitch, Princess Leia or Darth Vader? _____

Fun Facts!

Sound waves travel through matter (solid, liquid or gas). Sound waves can't travel in a vacuum so outer space is totally silent.

You cannot see sound waves, but if they have high amplitude and low frequency (fireworks, loud drums and thunder) you can feel them in your chest..

Sound of Science
Magnetic Worksheet

Grades K-2

Students will learn that magnets have a north and south pole and that like poles repel and opposite poles attract.

What are two things magnets do? _____ & _____.

Draw a picture of a magnet with a north pole and a south pole. Make a plus sign on the north pole and a minus sign on the south pole.

If you have two magnets and you put the north poles next to each other, what will happen?

_____

Circle all things we use in our daily lives that contain magnets:

1. Chewing gum	2. Mobile phone	3. Jump rope
4. Tissues	5. Soccer ball	6. Computer
7. Television	8. Video game	9. Refrigerator

TRUE OR FALSE:
Fly larvae look like rice and are called magnets. _____

The Wonder Of It All

Zak Morgan

Did you ever stop and ponder the wonder of it all?
The way that nature's beauty can inspire and enthrall.
The way a song can move you and raise goosebumps on your skin.
What lies in the future and how did it begin?

CHORUS
The wonder of it all. The wonder of it all. The wonder of it all. The wonder of it all.

The talent and precision of the average human hand.
The coded information on a fine DNA strand.
The graceful way an eagle can go soaring through the sky
And see a small fish swimming from beyond a mile high.

CHORUS
Our whole solar system is like a grain of sand
In an endless universe that continues to expand.
Who knows what else is living out in the great unknown?
It's hard to think with all that space we're in it all alone.

CHORUS

Science seeks the answers to the wonder of it all...

Lorna Doone

Zak Morgan

At my school there was a very pretty girl, her name was Lorna Doone.
I thought I would impress her if I got a pen and wrote a little tune.
When I sang my little number she said, “I’ve heard nothing dumber, you’re a loon!”
And now you kids must listen to the obfuscating canticle I crooned:

CHORUS
Lorna Doone, Lorna Doone, everything’s the matter with you!
Lorna Doone, pretty soon, you are gonna drive me cuckoo!
You’ve got volume and mass, you take up space, little lass,
Lorna Doone, Lorna Doone, everything’s the matter with you!

Bridge
Lorna Doone, I know you said my song wasn’t good,
Lorna Doone, I think you must have misunderstood.
The matter you’re made of is heavenly stuff,
But my flattery flopped and you left in a huff...

CHORUS

So my friends, gather ‘round and listen up and then we’ll bid adieu.
I’ve got white hair and wrinkles (so I’m wise), let me give you a clue;
Earth ain’t flat as a platter, I’m not mad as a hatter,
When you talk about the matter, don’t be vague or they will walk right out on you!

CHORUS

The Atom Family

Zak Morgan

At the heart of the matter is the atom,
And every thing that's ever been a thing has had 'em.
They have mass and take up space. Look around, they're everyplace!
They're even in the wig you're wearing, madam!

A single atom on its own is just too small
For any naked eye to see at all.
So I guess our only hope is to grab a microscope
From our labor-a-tory down the hall.

CHORUS
Atoms, little atoms, the matter is where you abound.
Atoms, atoms, atoms, atoms, you never fail to astound.
Atoms, tiny atoms, the matter is where you are found.
Atoms, atoms, atoms, atoms, it's sure good to have you around.

BRIDGE
Neutral neutrons, positive protons,
They stick together in the atoms' nuclei.
Negative electrons, attracted to the protons,
Swarmin' all around 'em like the Lord of the Flies.

CHORUS

The Electron!

Zak Morgan

CHORUS
The electron! The electron!
Buzzing around like a bee.
The electron! The electron!
Too fast and tiny to see.

Verse 1
You're on the run, it seems like you're always at large.
And the proton is positive, you have a negative charge.
But I've always believed that you are the genuine article.
They can say what they want, you'll still be my favorite particle.

PRECHORUS
I'm sure protons are fun, I like neutrons a ton,
But I'll always believe that you're number one...

CHORUS

Verse 2
I know you're all around me but I can't see you at all.
But I can see what you do when my hand is on a plasma ball.
In a colorful flash you jump from the coil to me.
Bringing the heat and always as cool as can be.

CHORUS

Sound Waves

Zak Morgan

I wrote a little song, I'm gonna sing it to ya, pal.
I can't wait to see your face when it goes rolling down your ear canal.
The sound waves coming from my mouth are gonna make you proud.
Some are short and quiet, some are very tall and loud.

PRECHORUS
Amplitude is volume, frequency is pitch.
If you sing it every day, you'll remember which is which.

CHORUS
Sound waves! Sound waves!
Sound waves! Sound waves!
Rolling through the air every day.
Listen up and I will show you the way!

The height of the wave, to put it simply, is the amplitude.
Some like it loud, others like it more subdued.
If the waves are close together you can gather that the pitch is high,
But if they come less frequently, the note is low and that is why.

PRECHORUS

CHORUS

Three Cheers For My Ears!

Zak Morgan

Sometimes I take for granted that I never would've heard what you said
If it wasn't for the organs that are sitting on the sides of my head.
If you feel 'em with your fingers, they're kind of fun to wiggle around.
A funnel for a tunnel to your brain so you can hear a sound.

PRECHORUS
Down the canal, bounce off the drum,
Rattle the bones, what's next to come?
Into the fluid, the little hairs sway,
The brain hears the sound, that's why I say...

CHORUS
Three cheers for my ears,
Hear! Hear! Hear!
Three cheers for my ears,
Hear! Hear! Hear!
When I sing this refrain
Your ears lead the sound waves into your brain!

Can you think of any sounds that are so wonderful you just have to smile?
Like the voice of someone you love you haven't heard in a while.
Or a melody so beautiful or haunting that it brings you to tears.
Not a day goes by that I don't thank my lucky stars for my ears.

PRECHORUS

CHORUS