

06 Sound and Hearing

Sounds of animals, human voices, noise of horns can be heard in our day-to-day life.

To observe those sounds, let's do the following activity.



Activity 6.1

- Go out of the class and pay your attention to the sounds that you hear.
- Then identify the sounds.
- List out the sounds you heard.
- Come to the class and compare the sounds you heard with those of your friends.

You may have heard many sounds in the environment. For a better understanding, let's do the following activity.



Activity 6.2

You will need :- Bristol boards, a pair of scissors and glue

Method :

- Make two equipment using the bristol boards as given in the figure.
- Keep them on your ear and listen to what you hear.
- Compare the intensity of sounds that you heard during the activity 6.2 with the sounds that you heard in the activity 6.1 and report the difference.
- You must have understood that the intensity of sounds heard are in the environment are clearer than in the earlier activity.

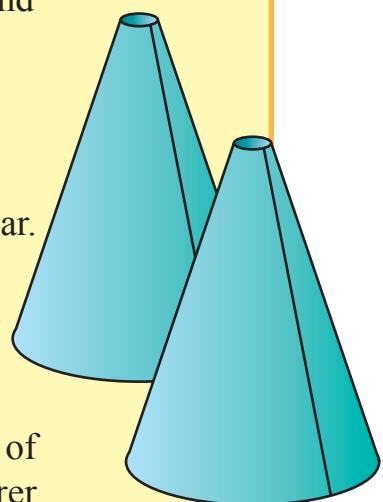


Fig:- 6.1

6.1 Producing Sounds

Let's do the following activity to identify how sound is produced.



Activity 6.3

You will need :- a bicycle bell

Method :

- Ring the bicycle bell.
- While it is ringing, keep a finger on it.
- Report what you felt.



Fig:- 6.2

You may feel a vibration when the bell rings.

Let's engage in the following activity to learn some ways in which sound is produced.



Activity 6.4

You will need :- A small drum and some small pieces of paper

Method :-

- Keep the small pieces of papers on the drum and play it.
- Observe what happens to the pieces of paper when the drum is beaten.

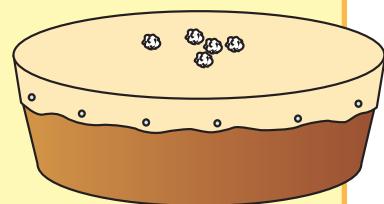


Fig:- 6.3

You may observe that the pieces of paper are moving here and there. That is because the hide of the drum is vibrated when it is beaten. This movement is called **a vibration**.

Therefore it is clear that sound is produced by vibrating something. The objects that produce sound are called **sources of sound**. Animals, various types of objects, musical instruments are examples for sources of sounds.

To produce different types of sounds, let's do the following activity.



Activity 6.5

- Tap the desk with a pen or a pencil.
- Clap your hands.
- Put some marbles or some green gram into a yoghurt cup and shake it.
- Crush a piece of paper with hand.
- Burst a balloon.

As mentioned above, we can produce sounds even by using simple methods.



Assignment 6.1

Try some more simple ways of producing sound.

6.2 Hearing of Sounds

Now let's find out how do we hear sounds.



Activity 6.6

- Tell your friend to close his/her ears and beat a drum. Then ask whether he/she could hear the sound clearly.
- Ask your friend to open and close his/her ears while listening to the sound of the drum.
- Ask him/her whether he/she noticed any difference in hearing when the ears are opened and closed.

Now, you can understand that when the ears are closed, you can't hear the sound of the drum. We can hear the sound of the drum only when the sound enters to our ear. Ear is the organ which senses sound. Ear lobes help to direct the sound into the ear.

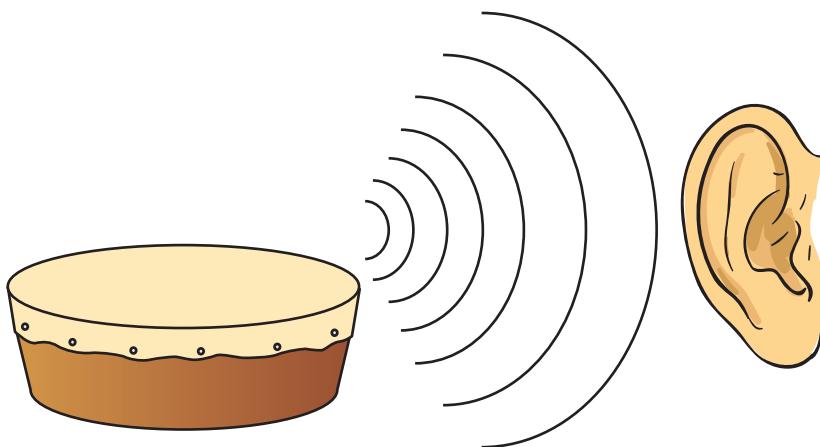


Fig:- 6.4



For your Extra Knowledge

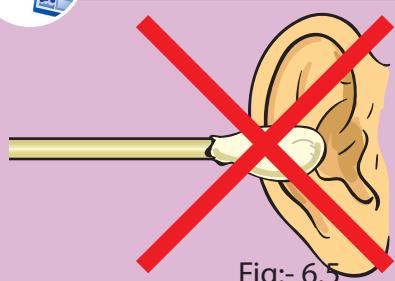


Fig:- 6.5

Ear can be damaged by putting external objects to itch the ear. If the ear is damaged, hearing will be weak.



Assignment 6.2

- Observe the different shapes of ear lobes of different types of animals and identify the diversity of ear lobes and draw them.
- Identify and report the changes that can be seen in the ear lobes of various animals when they hear sounds.

6.3 Diversity of Sounds

Some sounds that we hear in the environment are produced naturally.

For example:-

- Sound of wind
- Sound of birds
- Sound of a waterfall
- Barking of a dog



Fig 6.6 ▲ Examples of natural sounds

There are artificial sounds that are made by man using equipment. Following are some examples.

- Sound of a car
- Sound of an aeroplane
- Sound of a school bell
- Sound made by a guitar



fig 6.7 ▲ Examples of artifical sounds

6.4 Music and Noise

Sounds that are sung or played rhythmically are known as **music**.

For example:-

Sound created by violin, sound created by flute

Sounds that are not rhythmic are known as **noise**.

For example:-

Noise of traffic, noise of machines in a factory, noise in a fair.

When the sound of music is increased, it too can be a disturbance.



Fig 6.8 ▲ Examples of noises.



Assignment 6.3

- List out the noises that you can hear in a town.
- Write the source of sounds in front of the listed sounds.

6.5 Creating Equipment to Produce Sound

Let's make some equipment to produce sound.



Activity 6.7

You will need :- Several caps of soft drink bottles, a strong wire

Method :-

- Crush the bottle caps and make them as tablets.
- Make a hole in the middle of the caps and send the wire through the holes.
- Now, shake it.

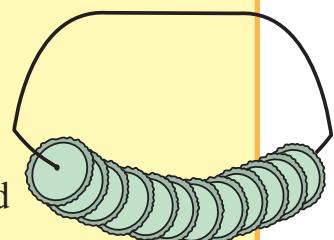


Fig 6.9



Activity 6.8

Let's make a clapper board

You will need :- A fairly large tin, a strong wire, a nylon thread, an iron rod

Method :-

- Make a hole at the bottom of the tin.
- Send the wire through the hole and hang the iron rod as given in the figure.
- Tie the nylon thread at the end of the iron rod and shake it.

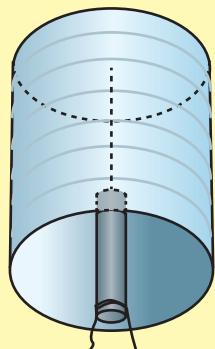


Fig 6.10



Activity 6.9

You will need :- A cardboard box, 6 thin rubber bands, 2 pencils, a piece of cardboard

Method :

- Cut a circular part out of the cardboard box.
- Then make a simple guitar as given in the figure and play it.

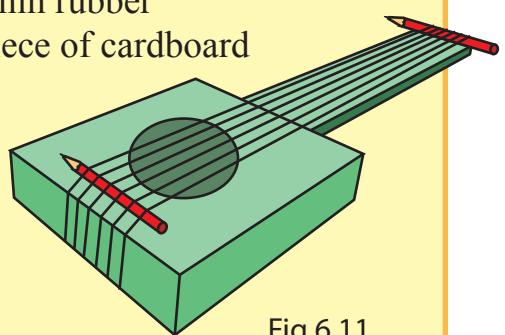


Fig 6.11



Activity 6.10

You will need :- Thin wires, a small tin, some nails, a thin wooden plank

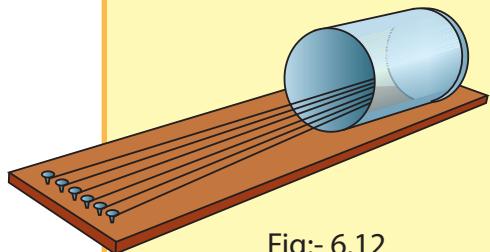


Fig:- 6.12

Method :-

- Fix 6 nails each at one end of the wooden plank and inside the tin which is fixed at the other end of the wooden plank.(They should be fixed in a straight line)
- Then tie the wires tightly around the nails as shown in the figure.
- Practise to play the tin guitar.

Given below are some other equipment which produce sound in the same way as the tin guitar you made.



Fig 6.13 ▲ Some instruments that produce music



Activity 6.11

You will need :- 6 pen tubes, gum tape, cardboard strip

Method :

- Cut the pen tubes as shown in the figure.(11.5 cm, 10.2 cm, 8.9 cm, 7.6 cm, 5.3 cm, 4 cm)
- Then make the bugle as given in the figure.
- Practise to play it in the ascending order and in the descending order.
- Search how the bugle produces sound.

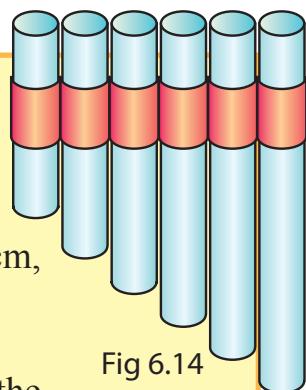


Fig 6.14



Assignment 6.4

Make a flute using tender coconut leaves and try to play it.

Figure 6.15 shows some other instruments which produce sound in the same way as a flute.



Fig 6.15 ▲ Some instruments that produce sound

Activity 6.12

you will need :- a tin with a large opening,
a balloon membrane, a rubber band

Method :

- As shown in the figure keep the balloon membrane stretched on the opening of the tin and make a drum.
- Beat it to a rhythm.

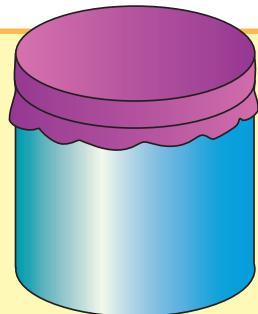


Fig:- 6.16

Given below are some instruments that are played as same as a drum.



Fig 6.17 ▲ Some instruments that produce sound.



Activity 6.13

You will need :- 6 equal glasses, a spoon, water

Method :-

- Take 6 equal glasses and put different amounts of water as shown in the figure.
- Strike each glass with a spoon in the ascending and descending orders.
- Play it rhythmically.

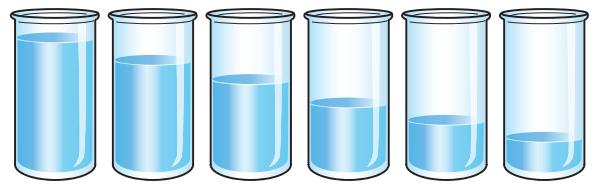


Fig 6.18



Activity 6.14

Let us make a xylophone.

You will need :- Pieces of metal pipes with 15 cm diameter, thin wooden plank, glue, a pair of scissors, cellotape

Method :

- Cut the pieces of metal pipes as shown in the figure. (17 cm, 15 cm, 13 cm, 11 cm, 9 cm, 7 cm)
- Then paste the cylinders on a wooden plank which has 7 cm width and 35 cm length as shown in the figure 6.19.
- Take 2 sticks and tap the cylinders rhythmically.

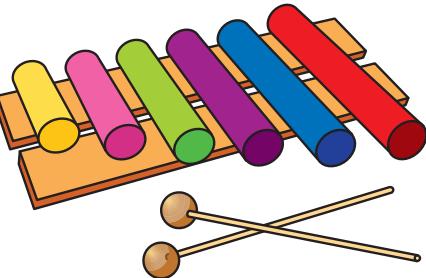


Fig 6.19



Assignment 6.5

- Take 6 wooden planks with a width of 2.5 cm as shown in activity 6.14.
- Cut them according to the sizes in activity 6.14.
- As shown in the diagram, keep two strips of cloth on the two pieces of wood and nail wooden planks on it.
- Then take two sticks and play it to a rhythm.

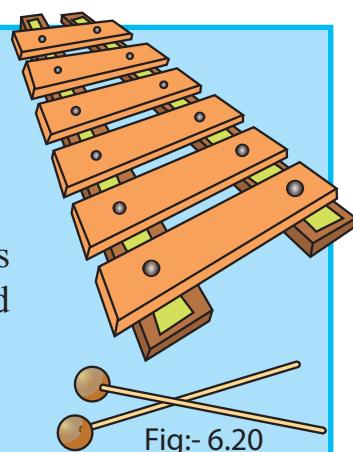


Fig:- 6.20



Assignment 6.6

- Make any amount of equipment that can produce sounds.
- Play the instruments with friends in the class and perform a musical band in the class.

Listening to loud sounds is a disturbance. Those sounds are also a disturbance to others. We must use television, radio, loud speakers and other equipment without disturbing others.



For your Extra Knowledge

By using ear protectors we can protect our ears from loud noises.



Fig:- 6.21 ▲ Ear protectors



SUMMARY

- We can hear different types of sound when we are in the environment.
- Ear is the sense organ that helps hearing.
- Sound is produced by sources of sound.
- Sound is produced by vibrations.
- The sound sung or played rhythmically is known as music.
- Unrhythmic sound is known as noise.
- Musical instruments can be classified into many groups according to the way they produce sounds.
- Loud noises are harmful for our ears.
- It is our duty and responsibility to use sounds without disturbing others.

Exercise

01. Fill in the blanks with the given words.

Sound is produced by of an Object. Objects that produce sound are known as Ear is an organ which is to sounds. Rhythmic sounds are known as and unrhythmic sounds are known as By hearing noises, can get affected. It is our duty to use without disturbing others.
(sources of sound, noises, sensitive, vibration, music, sounds, loud, ears)

02. If the following sentences are true, put a (✓) and if wrong put a (✗) within the brackets.

- i. Ear lobes help to direct sounds to the ear. ()
- ii. The sound of a Tabla is produced in the same way as in a violin.()
- iii. The sound of a flute is produced in the same way as in a trumpet. ()
- iv. Most of the time, rhythmic sounds are not a disturbance to the ear. ()
- v. It is suitable for people who work in places of loud noises to wear ear protectors.()

Glossary

Sound	- கலெட்டு/கிராவு	- ஒலி
Hearing	- ஓய்க்கீல்	- கேட்டல்
Ear	- கனம்	- செவி
Vibrations	- கமிப்பு	- அதிர்வு
Music	- சுங்கியல்	- இசை
Noises	- செய்துகூறு	- சத்தம்
Sources of sounds	- கலெட்டு பூர்வகங்கள்	- ஒலி முதல்கள்
Natural sounds	- சீவுகளிலிருந்து கிராவு	- இயற்கை ஒலி
Artificial sounds	- கட்டுமொழி கலெட்டு	- செயற்கை ஒலி
Ear protectors	- கனம் அரச்சுக்கள்	- செவிக்காப்பு உபகரணம்
Environment	- பரீகரம்	- சூழல்
Sense organs	- சுத்தீகரமாக்கப்பட்ட ஒலை	- உணர் திறனுள்ள அங்கம்