

You enjoy clapping. Now, open a palm of your one hand. Clap with one finger of your other hand. Then clap with two fingers. Then clap with three and four fingers. Now, clap all the friends jointly. Every time different sound heard ? We hear different sounds in our surroundings. We can get information about sound after hearing it. Like, sound is of what ? From where it is produced ?



What to do ?

- ☞ Close your eyes.
- ☞ Peacefully hear the sounds from your surroundings with concentration.
- ☞ Which sounds you hear ?
- Prepare the list of heard sounds :

e.g. Sounds of fan		

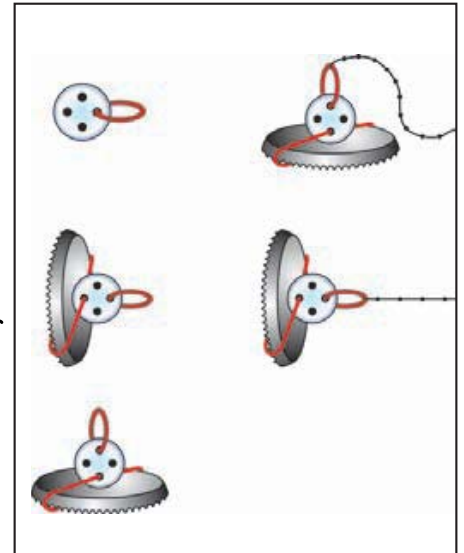
- Produce different sounds using objects with you. What you done to produce sound ?

**What is required ?**

Button, lead of cold drink-bottle, thread and rubber-band.

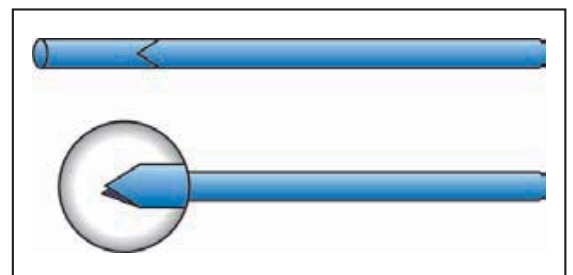
What to do ?

- ☞ Pass the rubber from one hole of button. Make knot of both the ends of rubber.
- ☞ Keep the button on the upper part of lead.
- ☞ As shown in figure pass another rubber from the other hole and tie a thread with it.
- ☞ Make two-three knot at different distances of thread.
- ☞ Hold the lead in your one hand. Pull the thread from the knot and release the rubber.
- Repeat the process two-three times. What happens when the knot is released from the fingers.



**What is required ?** Straw, scissor**What to do ?**

- ☞ Take a straw.
- ☞ Cut it in 'V' shape from one end.
- ☞ Compress the 'V' shape of straw by teeth.



What happens when you blow the air in the 'V' shaped part ?

Now, keep 'V' shape of part outside and suck the air from another side and now observe the 'V' shape. What happens ?



What is required ? Balloon

What to do ?

- ☞ Take a balloon.
- ☞ Blow the air in balloon.
- ☞ Now, slowly remove the air from balloon.
- ☞ Again blow air in balloon.
- Now, softly remove the air by stretching the mouth of the balloon with pinch of the fingers. Now, observe the opening of the balloon and note down.



What will you do ?

Do the following things :

- (1) Rub palm of your hands.
- (2) Keep the pencil horizontal and rub on your book.
- (3) Rub the compass-box on tiles.

There are three basic reasons for producing sound :

- (1) By colliding two things.
- (2) By vibrating the things.
- (3) By rubbing the things.



How the sounds are produced by following musical instrument ?



● Guitar

● Tabla

● Harmonium



What to do ?

☞ How the sound is produced by musical instruments which you see ?

☞ Write the name of musical instrument in following table and fill another information.

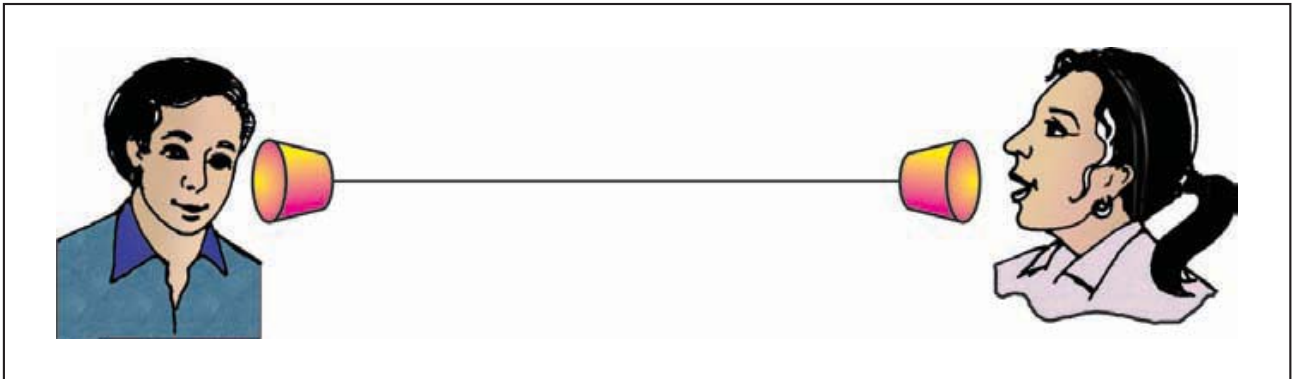
Name of musical instrument	Reason of a producing sound		
	By colliding	By vibrating	By rubbing

**What is required ?**

String, match-boxes and empty ice-cream cups and match-sticks.

What to do ?

- ☞ Take two empty cups.
- ☞ Make hole in the base of ice-cream cup.
- ☞ Pass string from the base hole of a cup.
- ☞ From the inside of both cup tie a knot of string with match-stick.
- ☞ Now this telephone is ready.
- ☞ Now, talk with your friend by a telephone.



- Can you hear clear sound ?

- By removing cup from ear, can you hear sound ?

- While your friend is speaking, touch the string lightly, what you feel ?

- Keep the string of telephone loose, can you hear sound ?

- How the sound of your friend reaches to you ?

Do yourself :

Now, prepare a telephone with your friend in this way. Now, do something by which three or four friends can talk together.



What is required ? Long stick and pencil

What to do ?

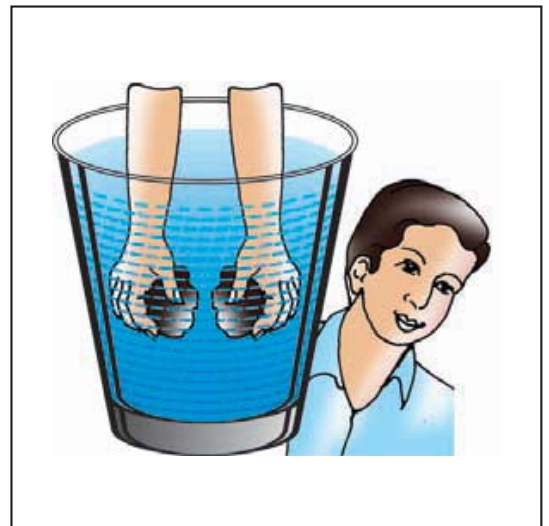
- ☞ Take one long stick.
 - ☞ Keep one end of stick near your ear.
 - ☞ Now tell your friend to tapping pencil slowly on stick.
 - ☞ Can you hear sound ?
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What is required ? Bucket, two small stones and water

What to do ?

- ☞ Take a bucket.
- ☞ Fill the water in the bucket.
- ☞ Ask your friend to keep his ear on the outer surface of the bucket.
- ☞ Now, take the stones in your hands and collide the stones inside the water 2-3 times.
- ☞ Can the sound be heard ?



- By passing through which medium sound is heard ?
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- Through which medium you can hear the sounds in your surroundings ?

In these ways the sound can pass through solid, liquid and gas medium. **Hope you understand that sound require medium to propagate.** While the sound cannot propagate through vacuum.



Through which medium sound is heard clearly ?

Why can't we hear the blasts on the surface of the sun and the moon ?



What is required ? Small ball

What to do ?

- ☞ Take one ball. Throw it on the wall.
- What happens ?

The way in which the ball comes back, in the same way, **the sound waves comes back after colliding with the wall or other surfaces and we can hear the sound again. That is called Echo.**

Speak loudly in the classroom, auditorium or the prayer-hall of your school. Can you hear your words again ?

When you go to any hill-station and if you see any hill in front of you, then speak loudly. After some time can you hear your sound back ?

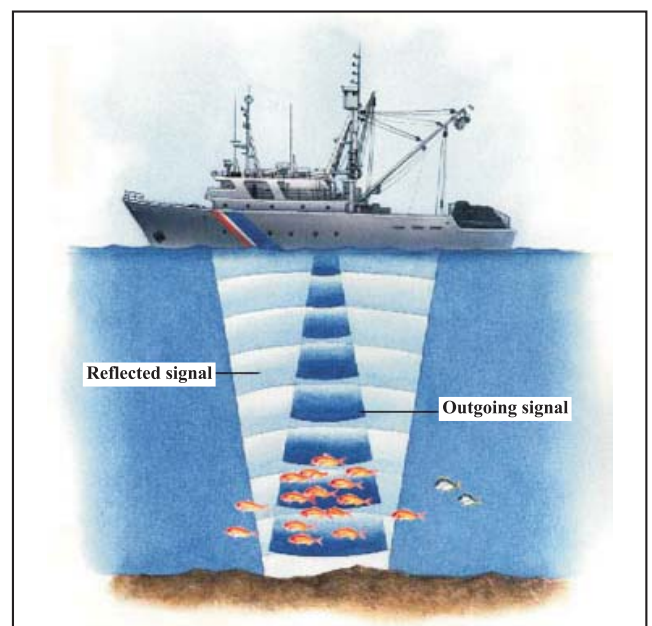


Why sound doesn't echo in the small room ?

If the time difference between the original sound and the echo is more than $\frac{1}{10}$ second then both can be heard separately. The speed of sound is 330 meter per second. So the distance of 11 meters is required for the time more than $\frac{1}{10}$ seconds. In small rooms the distance is less than 11 to 17 meters, due to this reason the sound reflecting from the wall or any other substance mixes with the original sound. Thus, there is no echo.

Uses of echo :

To measure the depth of the sea, to find the minerals present inside the earth or at the bottom of the sea. The sound waves are sent in, the sea by use of the loud speakers and in the earth by blast. The depth of the sea or the layers of the minerals present at the bottom layer can be found by measuring the time taken by the sound waves to travel back.



What is required ? Chits of papers on which different words are written.

What to do ?

- ☞ All friends speak the written words together loudly.
- ☞ Can you hear the different words clearly ?

☞ Why we cannot hear the words clearly ?

We like to hear the melodious voice, but we don't like to hear random voice. Thus, the voice which we don't like to hear is called noise.



Noisy places

Note down the places where there is noise-pollution.

Effect of noise :

- (1) Due to noise the nature of the person becomes irritating and person may get headache.
- (2) To be in noisy atmosphere for long time cause hearing defect.
- (3) We can't do work with concentration because of noise.

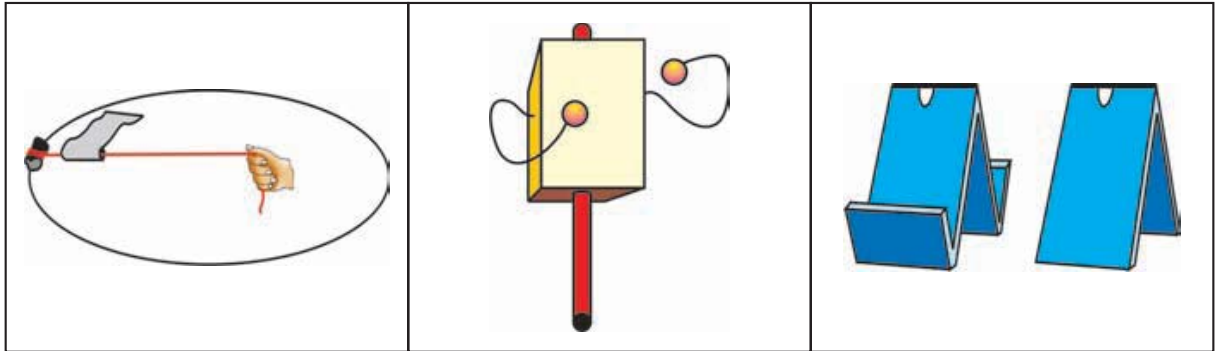
Cotton, cloth, thermocol, paper and soil absorbs noise. In the large auditorium and cinema halls, there are sound absorbing materials and walls are kept rough, so that sound doesn't echo. To decrease the noise due to the vehicles, trees are planted on both side of the roads.



What can we do for the protection from noise ?



Q.1 Do the following activities as shown in the figures :



Q.2 Prepare the list of sounds you like and sound you do not like.

Sound I like	Sound I don't like

Q. 3 What will you do to reduce sound in the vegetable market ?

Q.4 By using following things prepare a toy as shown in figure.

Outer shall of coconut, paper, gum, small stick, thin wire, nails, bamboo sticks.

