

Sound Experiments

Hang in there!

Experiment:

To investigate whether sound travels better through a solid or a gas.

Materials:

You will need-

Two 30 cm pieces of thread.

One metal clothes hanger.

A piece of paper and a pen to record your results.

Method:

What you have to do-

1. Tie one piece of thread to each end of the hanger.
2. Hold the hanger upside down by the ends of the pieces of string.
3. Bang the hanger against a table.
4. Listen to how loud the sound is!
5. Now repeat steps one and two but this time put your fingers in your ears while holding the strings.
6. Bang the hanger against a table.
7. Listen to how loud the sound is!



Results:

Did you discover what we did?

When your fingers are in your ears the sound is much louder.

Conclusions:

Sound travels better through a solid (string), than through a gas (air).

Table Thunder

Experiment:

Another experiment to investigate whether sound travels better through a solid or a gas.

Materials:

You will need-

- One friend.
- One table.
- A piece of paper and a pen to record your results.

Method:

1. Sit opposite your friend.
2. Knock on the table.
3. Listen to how loud the sound is.
4. Ask your friend to place their ear against the surface of the table.
5. Knock on the table again.
6. Ask your friend to describe how loud the sound is through the table.

Results:

Did you discover what we did?

When you listen to the knocking sound through the table, it is much louder.

Conclusions:

Sound travels better through a solid (table), than through a gas (air).

Tick Tock

Experiment:

To investigate through which solid, sound travels best.

Materials:

You will need-

- One friend.
- A watch - not digital!
- Different types of solids about the same thickness e.g. wood, glass, concrete, plastic, paper.
- A piece of paper and a pen to record your results.

Method:

1. Partner 1 and 2 should stand either side of the solid e.g. a glass window.
2. Partner 1 should hold the ticking watch against the solid.
3. Partner 2 should then press their ear against the solid on the other side and listen to the intensity of the sound of the 'tick tock' from the clock.
4. Repeat these steps using different solids and then record through which solid the 'tick tock' sound was loudest. In other words which solid let the 'tick tock' sound travel through best.

Bright ideas!

Make up a scale (1-4) of sound intensities, to help you record your results!

1. Very soft.
2. Soft.
3. Loud.
4. Very Loud.

Then record your results on a table like this one!

	WOOD	GLASS	PLASTIC	PAPER BOOK
Very Soft				
Soft				*
Loud		*	*	
Very Loud	*			

Larynx Laughs

Experiment:

To examine how the larynx or voice box vibrates as we speak.

Materials:

You will need-

- Yourself.
- Your hand.

Method:

What you have to do-

1. Place your hand firmly mid way on your throat.
2. Say 'aghhhh!' for as long as you can.

Results:

Did you discover what we did?

You can feel your throat vibrating

Good Vibrations

Experiment:

To examine (hear and feel) sound vibrations!

Materials:

You will need-

- A Partner.
- A balloon.

Method:

What you have to do-

1. Blow up the balloon.
2. Hold it against your ear.
3. Ask your partner to press their lips against the balloon and speak.
4. Repeat steps 3 and 4 but this time you should speak and your friend should listen.



Results:

Did you discover what we did?

You can hear the vibrations through the balloon and you can feel them.

You can feel your own voice through your lips as the balloon's skin vibrates against them.

Conclusions:

Sound is created when an object moves and the air around it vibrates creating sound waves.

Squawkers and Screechers!

Experiment:

To create some strange sounds with everyday materials.

Materials:

You will need-

- A drinking straw.
- A strip of plastic.
- Scissors.
- A balloon.

Method:

With the plastic:

1. Hold the strip of plastic tightly between your thumbs and the heels of your hands.
2. Blow hard across the strip.

With the straw:

1. Press one end of the straw flat.
2. Cut the sides to form a point.
3. Put the pointed end of the straw in your mouth and blow hard.

With the balloon:

1. Pump up the balloon.
2. Hold the neck to stop the air escaping.
3. Grip the neck of the balloon and stretch it.
4. What happens as the air escapes?

Results:

You can make some very weird sounds.

Make your voice louder

Experiment:

To create a megaphone and discover how we can make our voices louder and how we can hear more.

Materials:

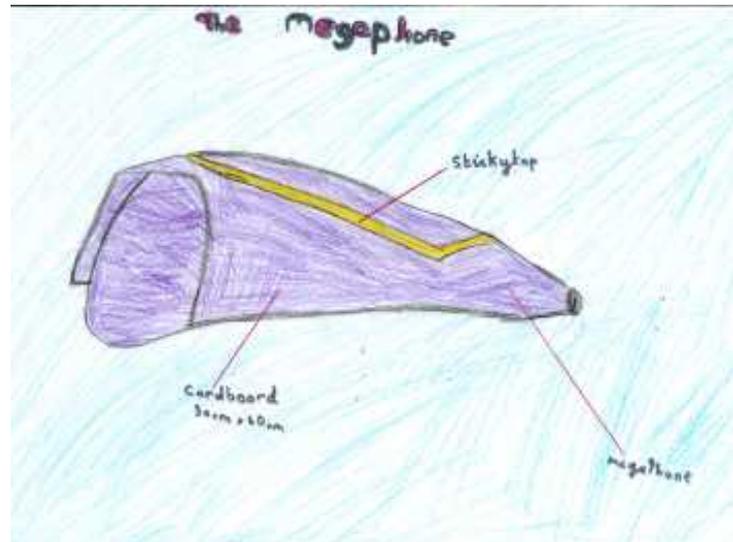
You will need-

- Sticky tape.
- A scissors.
- A large sheet of paper.

Method:

What you have to do-

1. Roll the paper into a cone.
2. Stick tape along the edge of the rolled paper to secure it.
3. Put the cone over your mouth and talk into it.
4. Put the cone to your ear.



Results:

What happens when you put the cone to your ear?

What happens when you put the cone to your mouth and speak?

Create a Paper Banger!

Experiment:

To create a loud bang with paper!

Materials:

You will need-

A sheet of paper about 30 x 40 cm.

Method:

What you have to do-

- 1) Fold the longest edges of the paper together, and open it out again.
- 2) Fold down each of the four corners to the first center fold.
- 3) Fold the paper in half along the first centre fold.
- 4) Fold the paper in half again and then open it out.
- 5) Fold down the two top corners.
- 6) Fold the paper back to make a triangle shape.
The banger is ready now.
- 7) Grip the banger firmly by the two top corners.
Swish it down sharply with a quick flick of the wrist.

Results:

A loud bang occurs!

Talking String

Experiment:

To prove / examine how sound can travel through objects.

Materials:

You will need -

- Two pieces of tracing paper.
- One pencil.
- Sticky tape.
- String.
- Two rubber bands.
- Two paper clips.
- Two cardboard tube.

Method:

What you have to do -

1. Fold a piece of tracing paper over one end of each tube.
2. Fix it with a rubber band.
3. Pull the paper tight and tape it to the tubes.
4. Thread the string through both holes.
5. Tie a paperclip to each end to stop the string slipping back through.
6. Use the tubes as a simple telephone.
7. Hold one tube to your ear and listen while your friend speaks softly into the other tube.

Results:

What happens?

Conclusions:

Why do you think this is happening?

What happens when you place cotton wool into the tubes?

Why?

Echoing Sound

Experiment:

To bounce sound!

Materials:

You will need-

- Two pieces of tracing paper.
- One plate
- Cork
- Several books
- A ticking watch
- Two cardboard tubes
- A friend

Method:

What you have to do-

1. Build two piles of books, they must be the same height.
2. Carefully lay the tubes on the books as shown above.
3. Hold the watch to your ear.
4. Listen carefully to make sure you can hear it ticking.
5. Put the watch just inside the end of one tube.
6. Listen at the end of the other tube. Can you hear the watch?

Ask a friend to hold the plate near the far ends of the tubes. Can you hear the watch?

Now ask your friend to replace the plate with the cork. Can you hear the watch?

Results:

What happens?

Conclusions:

Why do you think this is happening?

What happens when you place cotton wool into the tubes?

Why?

More things to try:

Wood,

Cotton Wool

Finding the beat! Be a Doctor.

Experiment:

To make soft sounds loud.

Materials:

You will need-

- Plastic Tubing,
- A Scissors
- Sticky Tape
- A funnel

Method:

What you have to do-

1. Put the funnel into the plastic tube and secure it with tape.
2. Put the funnel against a friend's chest and hold the end of the tube to your ear.

Results:

What happens?

Conclusions:

Why do you think this is happening?

A Sound Detector

Experiment:

To examine how the ear detects the arrival of sound.

Materials:

You will need-

A rubber band.
Uncooked rice.
A plastic bowl.
A scissors.
A saucepan.
A large spoon.
A piece of plastic.
Sticky tape

Method:

What you have to do-

1. Cut the piece of plastic so that it is bigger than the top of the bowl.
2. Stretch the plastic tightly over the bowl and secure it with a rubber band.
3. Tape the plastic down to keep it stretched. This is your drum.
4. Sprinkle a few grains of rice on top of the drum.
5. Hold the saucepan near the drum and hit it sharply with the spoon.

Results:

The grains of rice jump up and down!

Conclusions:

Why do you think this is happening?

A Sound Gun

Experiment:

To examine sound waves as they travel through the air.

Materials:

- You will need-
- A strip of thin plastic.
- A piece of stiff card.
- A cardboard tube.
- A strip of paper.
- A pencil.
- Scissors.
- A rubber band.
- Sticky tape.

Method:

What you have to do-

- 1) Use the tube to draw a circle on the piece of paper.
- 2) Cut out the circle.
- 3) Make a hole in the center of the circle with the pencil.
- 4) Tape the circle firmly to one end of the tube.
- 5) Fold the plastic over the other end of the tube, and secure it with the rubber band.
- 6) Fold the paper strip and tape one end to a flat surface so that the other end sticks up.
- 7) Hold the tube so that the hole points at the top of the paper strip.
- 8) Sharply tap the other end of the tube.

Results:

What Happens?

Conclusions:

Why do you think this is happening?

Make a Hydrophone

Experiment:

To make a hydrophone and to examine whether or not sound waves can travel under water.

Materials:

You will need-

- A plastic 2 litre bottle.
- A basin.
- Water.
- Two rocks.
- A scissors.
- A Friend.

Method:

What you have to do-

1. Cut off the base of the plastic bottle.
2. Fill the basin with water, but not to the top.
3. Place the plastic bottle into the water.
4. Put your ear to the top of the bottle.
5. Ask your friend to bang two stones together under the water, near the bottle.
6. Repeat the experiment above the water.

Results:

Did you discover what we did?
Can sound waves travel through water?

Through which does sound travel better, air or water?

Conclusions:

What did you discover?

Make a Model Ear

Experiment:

To examine how the ear works by making a model ear!

Materials:

You will need-

- A pen.
- An elastic band.
- A scissors.
- Glue.
- Double sided tape.
- A table tennis ball.
- Card.
- A bendable drinking straw.
- A transparent bowl.
- Water.
- Detachable cake tin sides.
- Card with a grid of squares on it.



Method:

1. Draw a rectangle with two slits on the thick card.
2. Draw around half of the cake tin.
3. Carefully cut out the shape you have drawn.
4. Repeat steps 1-3.
5. Cut out two rectangles of card, each with two slits at either end of the top edges.
6. Join all the card pieces at the slits. This is the stand that your "ear" rests on.
7. Put a large piece of cling film over one end of the tin.
8. Hold it in place with the elastic band, and make sure that it is stretched tight.
9. Cut a large triangle of thin card, with a flap along half of the long edge.
10. Fold the triangle in two.
11. Dab glue on the flap.
12. Glue one end of the straw to the inside of the triangle.
13. Slit the other end of the straw.
14. Stick the table tennis ball to the straw with sticky tape and attach the triangle to the cling film.
15. Make sure that the end of the straw is at the center of the circle.
16. Place the tin on its stand, so the ball just dips into the water in the bowl.
17. Put the grid card below the bowl to make it easier to see the ripples in the water.
18. Make lots of different sounds behind the drum and watch the eaters surface.

Results:

Do different sounds make different ripples?
Can you identify the different parts of the ear?

Conclusions:

Why do you think this is happening?

Make some Musical Instruments!

Drums

Activity:

To make a plastic drum.

Materials:

You will need-

- A rubber band.
- A pen.
- A sheet of plastic.
- A Plastic bowl.

Method:

What you have to do-

- 1) Fit the plastic over the bowl.
- 2) Pull the plastic tight and secure it with a rubber band.
- 3) Grip the plastic firmly to stretch it smoothly across the bowl.
- 4) Strike it with the pen.
- 5) Out comes the sound of a drum.

Shakers

Activity:

To make some shakers

Materials:

You will need-

- A scissors.
- A plastic bottle.
- Paper clips.
- Coloured tape.

Method:

- 1) Put a few paper clips into the bottle.
- 2) Screw the cap firmly.
- 3) Hold the bottle and shake it to and fro. The paperclips strike the sides of the bottle to give a rattling sound.
- 4) Collect other small objects and make more shakers with them. They all give different sounds. Decorate your shakers with strips of coloured tape.

A Guitar

Activity:

To make a Rubber Guitar.

Materials:

You will need -

- Rubber bands of varying thickness.
- Three colouring pens.
- A Baking tin.

Method:

- 1) Stretch the rubber bands lengthways across the tin.
- 2) Pluck the bands to hear what sort of sound they make. It's rather dull.
- 3) Now put a pen underneath the rubber bands at each end of the tin.
- 4) Pluck the bands again. The sound is much clearer than it was before.
- 5) Press the third pen on the bands.
- 6) Slide it up and down as you pluck the bands. The pitch of the notes changes.

Bottle Pipes

Activity:

To make Bottle Pipes.

Materials:

You will need -

- Food colouring or ink.
- A jug of water.
- Narrow necked glass bottles.

Method:

- 1) Set out the bottle in a line. You will need six or more bottles to make a tune.
- 2) Pour a different amount of water into each bottle.
- 3) You can colour the water to make the levels easier to see, and to make the bottles look pretty.
- 4) Blow gently across the top of each bottle. Each one makes a different musical note.
- 5) You can try changing the water levels to get notes that make a tune.

Music with Holes

Activity:

To make a Reed Instrument.

Materials:

You will need -

- A cardboard tube.
- A drinking straw.
- Tracing paper.
- A pencil.
- Scissors.
- A sticky tape.

Method:

- 1) Press one end of the straw flat. Cut the sides to make a point.
- 2) Fold the tracing paper over one end of the tube and secure it with sticky tape.
- 3) Using the pencil, make a small hole in the centre of the tracing paper.
- 4) Carefully push the round end of the straw through the hole.
- 5) With the pencil make six holes along the length of the tube. Cover the holes with your fingers on and off the holes, you can change the pitch of the note.