

Sound Wordsearch

V	O	B	Y	S	E	T	O	N	C	I	J	E	T	H
F	D	I	L	O	S	P	I	D	E	H	K	G	A	S
A	K	U	C	U	G	A	H	W	A	T	E	R	Y	N
G	N	D	J	T	B	X	Q	G	R	I	Z	L	H	O
W	H	A	L	E	S	G	S	H	D	M	G	R	S	I
Z	E	I	I	R	K	Q	K	J	R	S	E	B	U	T
F	R	R	S	L	M	C	I	S	U	M	I	Z	L	A
W	M	O	T	Q	N	E	N	T	M	D	H	E	A	R
R	S	K	E	V	W	F	U	P	S	O	F	W	X	B
E	O	P	N	E	A	R	N	R	O	U	T	O	I	I
N	F	B	W	F	V	P	Q	C	L	J	Y	O	E	V
N	T	R	A	V	E	L	M	S	O	U	N	D	M	J
I	L	A	Y	B	S	W	C	V	U	D	E	R	K	W
X	Z	I	A	X	N	T	L	S	D	I	U	Q	I	L
A	E	N	E	R	G	Y	B	C	U	B	V	A	D	S

Air    brain   ear    eardrum

Energy                    gas                    hear                    inner

Liquid                    listen                    loud                    music

Notes                    outer                    skin                    soft

Solid                    sound                    travel                    tubes

Vibrations                    water                    waves                    whales

Wood



## *Changing Sounds*

Sound is a form of energy. For sound to be produced vibrations must be set up by a source. This is done by hitting (drum), blowing (recorder), stroking (sand paper on wood) and electrical (loudspeaker).

The vibrations travel through a solid liquid or gas and reach our ears where it can be heard. If the vibrations have a lot of energy then they are loud. If they have little energy then the sound is quiet. Sometimes the vibrations can be seen or felt on the skin.

In air, sound travels at 1,160 km per hour, but speeds up in water to 5,400 km per hour. Things which travel faster than sound are called supersonic. The Concorde can travel faster than sound.

Dolphins communicate with each other under the sea. The sound can travel for hundreds of miles, much further than in air. Sound travels even more quickly through a solid metal than through the air or water. Standing near a railway line, a humming from the rails can be heard several minutes before a train itself can be heard directly.

Sound travels through solids and liquids as well as air. Sound cannot travel through a vacuum. Sound travels at different speeds in different substances. This is because different substances are made up of particles in different ways. The sound pushes the particles and as it travels it moves from one particle to another. In a gas the particles are far apart, so some of the sound energy is lost when trying to push one particle into another one. Therefore the speed of sound is slow so it will not travel as fast as it does in substances where the particles are closer together.

Pitch is the highness or lowness of a sound. A high pitch is caused by short vibrations and a low pitch is caused by long vibrations.

The pitch of a note produced by a guitar depends on the *length*, *thickness* and *tension* of the string. A shorter, thinner, tighter string produces a high pitch and a longer, thicker, looser string produces a low pitch. On a guitar the strings can be shortened by putting a finger on the fret board.

In a wind instrument a column of air is set vibrating and the pitch depends on the length of the column. A long column makes a low pitch and a short column makes a high pitch.

The loudness (volume) of the sound depends on the amount of energy the vibrations contain and the rate at which this energy is transmitted. If a string is plucked hard the vibrations will contain more energy and the sound will be louder than if it were plucked more gently.

## Questions



1. What is sound?
2. How is sound produced?
3. What do sound vibrations travel through?
4. Through which substance does sound travel fastest?
5. Why is this?
6. Why do you think sound cannot travel through a vacuum?
7. What is pitch?
8. How would you create a high pitch on:
  - a. A guitar?
  - b. A recorder?
  - c. A drum?
9. What does the volume of sound depend on?
10. How would you play a drum quietly?
11. How much energy do you think the vibrations would have if you did this?
12. If the vibrations had lots of energy, what would the volume be like?



## Changing Sounds

Sound is a type of \_\_\_\_\_. Sound is produced by \_\_\_\_\_.

Vibrations are made must by \_\_\_\_\_ a drum, \_\_\_\_\_ a recorder, \_\_\_\_\_ a string.

\_\_\_\_\_ can travel through a solid \_\_\_\_\_ or gas and reach our ears where it can be heard. If the vibrations have a lot of energy then they are \_\_\_\_\_. If they have little energy then the sound is \_\_\_\_\_. Sometimes vibrations can be \_\_\_\_\_ on the skin.

Sound travels faster in a solid than in \_\_\_\_\_. It travels faster in water than it does in \_\_\_\_\_.

Dolphins communicate with each other under the \_\_\_\_\_.

Pitch is the highness or lowness of a sound. A \_\_\_\_\_ pitch is caused by short vibrations and a low pitch is caused by \_\_\_\_\_ vibrations.

The pitch of a note produced by a guitar depends on the *length*, *thickness* and *tension* of the string. A shorter, thinner, tighter string produces a high pitch and a longer, thicker, looser string produces a low pitch. On a guitar the strings can be shortened by putting a \_\_\_\_\_ on the fret board.

When you \_\_\_\_\_ into a wind instrument the air vibrates. The pitch depends on the length of the column. A long column makes a \_\_\_\_\_ pitch and a \_\_\_\_\_ column makes a high pitch.

The loudness (volume) of the sound depends on how hard a string is plucked. The sound will be louder the harder it is plucked.

hitting  
vibrations  
plucking  
blowing  
energy

liquid  
sound  
felt  
loud  
quiet

air  
sea  
high  
long  
water

blow  
low  
short  
finger



Our Chosen Instrument Design

Draw two illustrations of your instrument, a side view and an aerial view.

Side View

Aerial View

Our Chosen Instrument Design

Write a list of the materials you will need to make your instrument:

Write a list of the tools and equipment you will need to make your instrument:

Describe how your instrument will work:

1.

2.

Evaluation of School-Made Musical Instrument

1. Which instrument idea did you choose to make and why?

2. What materials did you use, where they good or bad choices?

Material List	Good / Bad and why?

3. What tools and equipment did you use? How did this help with your work?

Tools / Equipment	How useful?

4. Did you have any problems during the making of your instrument? If so, how did you solve these problems, did you need any help?

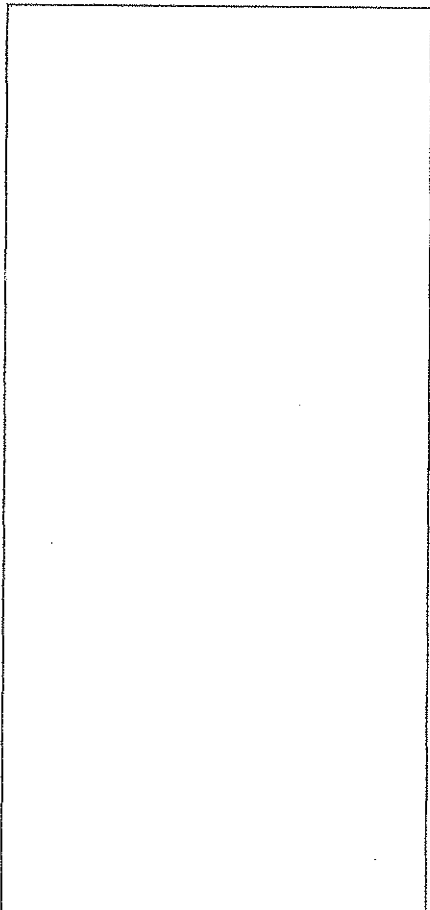
3.

Evaluation of School-Made Musical Instrument

5. Did you make any changes or improvements to your instrument as you went along?

6. Is your finished instrument different from your drawing? Explain how different it is.

7. Draw your finished instrument carefully in the box below:



8. If you were to make your instrument again is there anything you would change or improve?

9. Which parts of the instrument project have you enjoyed the most and why?

4.