

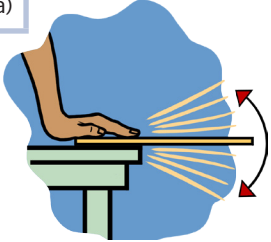

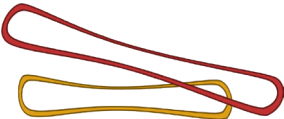

Science

Topic 11: Air, Wind and Sound

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1. Match the descriptions about **making sounds** with the pictures. Write your answers in the spaces below.

1	Pluck the bands.	2	The air inside the bottle vibrates when you blow.
3	Tap the drum with a pencil. Listen to the sound it makes.	4	The membrane on the top of the drum vibrates.
5	Partly fill the bottle with water so there is less air inside.	6	This makes the sand vibrate as well.
7	Flick the free end so that it vibrates to and fro.	8	The sound changes if you change the vibrating length.
9	They create a twanging noise and they vibrate to and fro.		

<p>a)</p> 	<p>Hold one end of the ruler over the edge of a table.</p>	<p>7</p>
<p>b)</p> 	<p>Blow across the top of a bottle to make a sound.</p>	
<p>c)</p> 	<p>Stretch rubber bands around a box.</p>	
<p>d)</p> 	<p>Sprinkle some sand on a tin drum.</p>	

2. Choose the correct words from the list to fill the gaps in the text about **how sounds travel**. The words can be used more than once.

pressure	squashing	sounds	to and fro
sound wave	sound	underwater	

a) _____ travel through the air to our ears. A vibrating object moves
b) _____. As it moves forwards it pushes against the air around it,
c) _____ it and raising its ^{d)} _____ a little. As it moves backwards it
lets the air spread out so that the ^{e)} _____ falls. These up and down changes in
^{f)} _____ travel through the air as a ^{g)} _____ wave. A
^{h)} _____ travels away from the ⁱ⁾ _____ source in all directions, just
like the water waves that travel away from a stone thrown into a pond. Sound waves travel through
solids and liquids too. You can hear sounds when you swim ^{j)} _____. Dolphins and
whales make underwater ^{k)} _____ to communicate with each other. This proves
that sounds can travel through liquids.

3. Make sentences about **sounds** by matching the beginnings and endings. Write your answers in the grid below.

a)	A flute is high pitched like	1	you pluck it.
b)	A string bass is low pitched like	2	you blow it.
c)	A short length of ruler is stiffer and	3	a man's voice or a rumble of thunder.
d)	Fast vibrations make a higher pitched sound than	4	a small bird's song or a child's voice.
e)	The air inside a flute vibrates when	5	the length of the string and the pitch of the note.
f)	Opening finger holes in the flute changes	6	the length of vibrating air and the pitch of the note.
g)	A guitar string vibrates when	7	slow vibrations.
h)	By pressing the string to the finger-board you change	8	vibrates faster than a longer length.

Write your answers here:

a)	b)	c)	d)	e)	f)	g)	h)

4. Underline the correct words to make sentences about **sound pollution**.

Sounds that ^{a)} **spoil / storm / squash** the environment are called sound pollution. Passing traffic may make it difficult to hear someone speak.

The noise from a construction site may give you a ^{b)} **headache / echo / cough**. Aircraft ^{c)} **nitrogen / noise / reflection** may stop you sleeping. The ^{d)} **loudness / liquid / tension** of sounds is measured in decibels.

The sound of people talking quietly is about 40 decibels. ^{e)} **Natural / Noisy / Mixture** traffic is 80 decibels. A loud pop concert is 100 decibels.

People working in noisy environments such as construction sites and airports must wear ear ^{f)} **particles / pores / protectors**. These are filled with soft materials that ^{g)} **absorb / blow / condense** sound.

A jet aircraft nearby is 130 decibels. Sounds this loud make your ears hurt. Short ^{h)} **exposure / erosion / emission** to sound levels above 130 decibels, or longer-term exposure to levels above 100 decibels can ⁱ⁾ **beautifully / permanently / loudly** damage your hearing.

5. Match the **properties of air** with their correct method of investigation. Write your answers in the grid below.

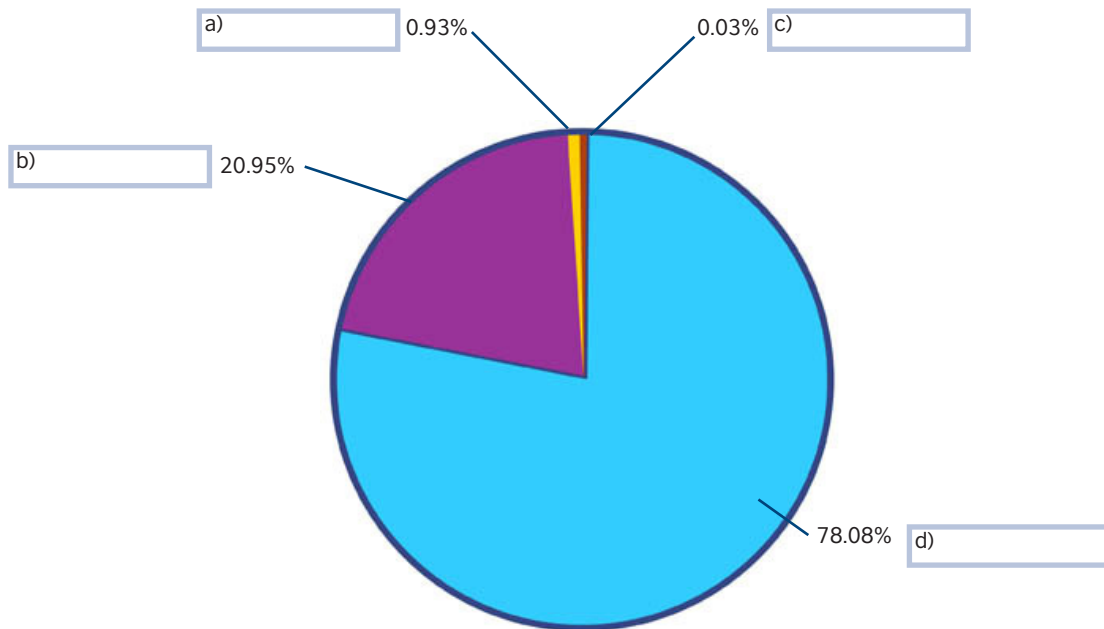
Investigation		The properties of air	
a)	You can see through the air in a bottle and the air around you.	1	Air takes up space and is all around us
b)	An 'empty' bottle is full of air. The air takes up the space inside the bottle. If you squeeze the bottle underwater, bubbles of air come out. What happens when you let go? Why does water go into the bottle? It fills the space of the air you have squeezed out.	2	Air is colourless and transparent
c)	Blow up a balloon. The air you blow in pushes against the sides of the balloon, which stretch. We say that the air exerts pressure.	3	Air has weight
d)	Make a balance with a stick, thread and balloons. Move the threads until the stick is level. Now pop one balloon with a pin. What happens? The air inside a balloon has weight. When you pop a balloon, air escapes. The balloon is lighter so the balance tips.	4	Air exerts pressure

Write your answers here:

a)	b)	c)	d)

6. Use the information from the text about the **mixture of different gases in air** to label the diagram.

The air is a mixture of different gases. The gas we need to breathe is called oxygen, but other gases are also present. Oxygen is the gas needed to make things burn and makes up 20.95 per cent of the composition of dry air.



As well as nitrogen (which counts for 78.08 per cent) and oxygen, there are much smaller amounts of other gases such as carbon dioxide at 0.03 per cent. Carbon dioxide is used by plants to make food in their leaves. The air also contains water vapour. The amount of water vapour varies. When it is humid, the air contains lots of water. When there is less water vapour, we say the air is dry. Air can only hold a certain amount of water at a given temperature. If the air cools, some of the water condenses to make dew, mist, or rain clouds. One of the other gases is argon with 0.93 per cent.

7. After reading the text about **uses of gases in air**, choose the correct words from the list to complete the table. Write your answers in the spaces provided.

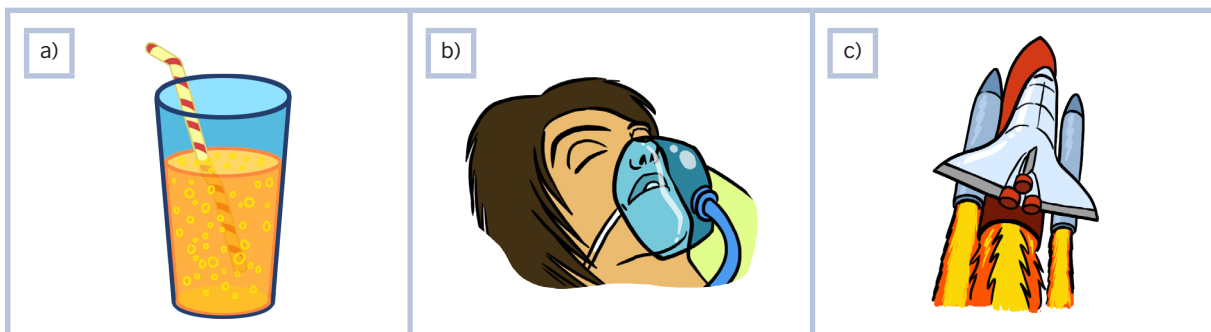
Nitrogen is used to make fertilisers for plants. Liquid nitrogen is used to freeze food and to remove warts. Oxygen is used in breathing apparatus for hospital patients and for divers. The space shuttle carries a tank of liquid oxygen to burn the fuel for its rocket engines. Carbon dioxide adds the 'fizz' to fizzy drinks. We say that they are carbonated. Carbon dioxide is also used to fight fires. Because it doesn't burn and is heavier than air, it is an invisible 'blanket' that smothers flames.

a)	breathing apparatus	b	removing warts
c)	fighting fires	d	burning rocket fuel
e)	carbonating drinks	f	making fertilisers
g)	freezing foods		

Gas	Properties	Uses
nitrogen	colourless, odourless, and tasteless doesn't burn slightly lighter than air	<input type="text"/> <input type="text"/> <input type="text"/>
oxygen	colourless, odourless and tasteless needed for breathing and burning dissolves a little in water	<input type="text"/> <input type="text"/>
carbon dioxide	colourless, odourless and tasteless dissolves in water heavier than air doesn't burn	<input type="text"/> <input type="text"/>

8. The **uses for gases in air** in Exercise 7 have been illustrated below. Choose the correct phrases from the list to label the pictures. Write your answers in the grid below.

1	breathing apparatus	2	burning rocket fuel
3	carbonating drinks	4	fighting fires
5	making fertilisers		



Write your answers here:

a)	b)	c)	d)	e)

9. Choose the correct words from the list to fill the gaps in the text about the **air**.

asthma	blocked	cotton
cough	disease	particles
reduces	trap	vacuum

Dirty air makes us ^{a)} _____, causes breathing difficulties such as ^{b)} _____, and transmits ^{c)} _____. Dirty air must be cleaned before we breathe it. Workers on a construction site wear masks to filter dust from the air. The masks are made from ^{d)} _____ fibres. Dust ^{e)} _____ are trapped by the fibres,

but air passes through. The air in city buildings is cooled and filtered so that people inside have clean air to breathe. A ^{f)} _____ cleaner has an air filter. This traps dust so that it is not blown back into the room. A car has an air filter to stop dust getting into the engine. The filter must be changed every year or it will become ^{g)} _____. A computer has an air filter to ^{h)} _____ dust drawn in by its cooling fan. Too much dust stops parts like the disk drive from working. A power station chimney has a filter. This traps dust with electricity (just as dust is attracted to a TV screen). The filter ⁱ⁾ _____ the amount of dust released into the air.

10. Find with the words on **weather and music in the word search.**

<p>J L L D W H I S T L E R G E L R</p> <p>C B E M U A C Y C L O N E H E E</p> <p>I N C P R D T I G O S T F G T G</p> <p>W O E O M E E N D C Y M B A L E</p> <p>G E E L B C A M F F G L R N O G</p> <p>C U G L V I O L I N A O W X E S</p> <p>L W I U R B I T T S P H T I E A</p> <p>A T Z T E E A F E A T U D C N N</p> <p>R T M I A L H R V X T M E O T D</p> <p>E S Z O O R J E M O U I I Y N S</p> <p>T H U N D E R T P P P D E E M T</p> <p>C P A N D F S R E H R O X N C O</p> <p>A E S P H F G T T O R E L X O R</p> <p>C X W T N U T U C N I R T R A M</p> <p>B E E N R E O C N E R N S R N S</p> <p>D P A O T M A R G J N H G S N P</p>	<p>accordion</p> <p>cyclone</p> <p>cymbal</p> <p>decibel</p> <p>evaporate</p> <p>fret</p> <p>guitar</p> <p>humid</p> <p>mist</p> <p>mouthpiece</p> <p>pollution</p> <p>sandstorm</p> <p>saxophone</p> <p>thunder</p> <p>triangle</p> <p>whistle</p> <p>violin</p> <p>wind</p>
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11. Complete the crossword by answering the following questions. All the correct answers are words about **air, wind, and sound.**

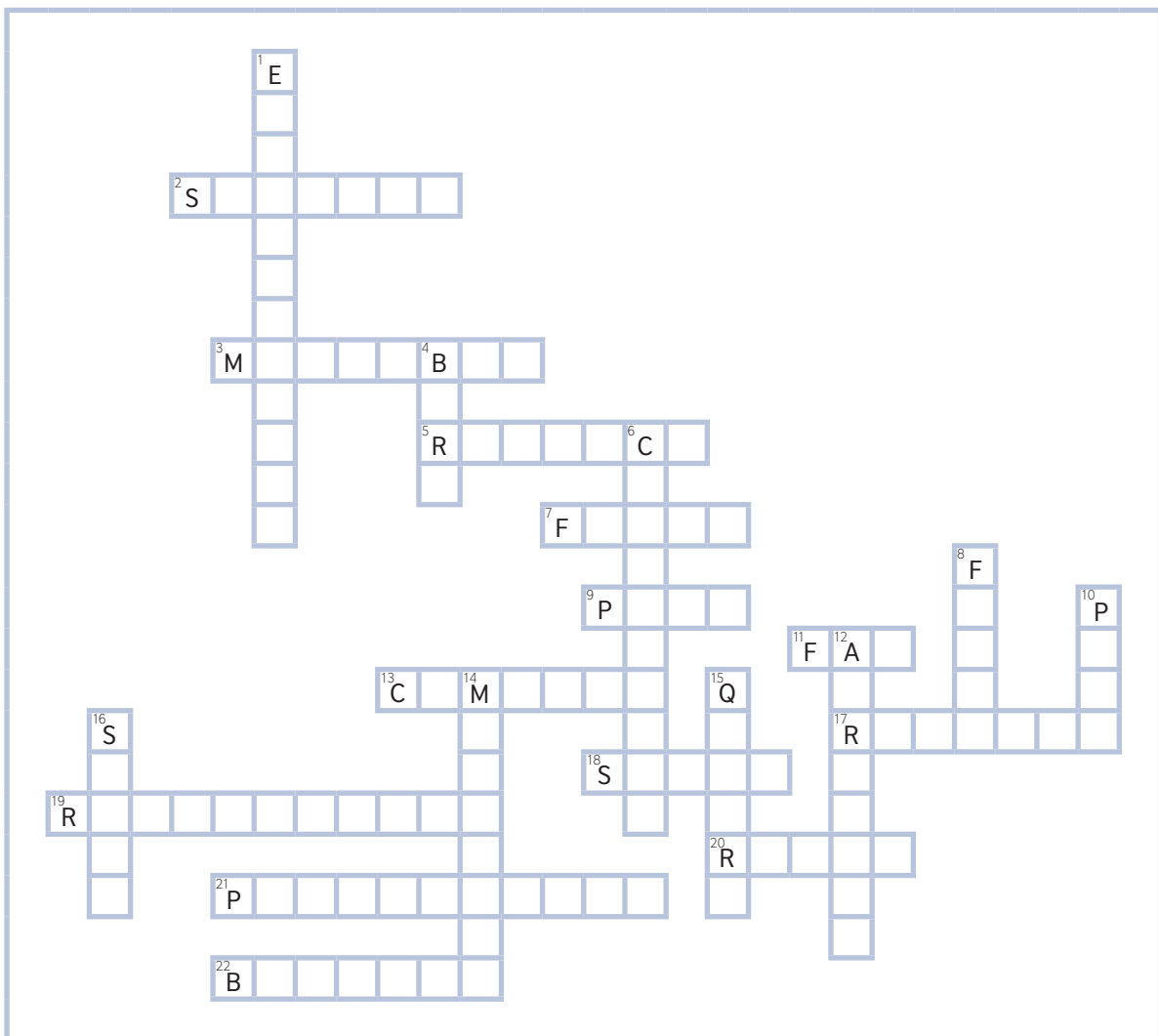
Across

2. The activity of breathing in fumes from cigarettes or pipes into your mouth and lungs.
3. A small box, usually of cardboard, for matches.
5. What a mirror does, or what a sound does when it bounces off a surface.
7. Smoke or gas that has an unpleasant smell, especially harmful smoke or gas.
9. Encourage or force someone in a determined way to do something they do not want to do.
11. A machine with blades that turn and move the air in a room to make it feel less hot.

13. A mixture of decaying plants and vegetables that is added to soil to improve its quality.
17. Reprocess waste materials such as bottles so that they can be used again.
18. A piece of equipment on a ship that measures the depth of water and shows the position of objects under the water.
19. The process of breathing air in and out.
20. Happening, moving, or acting quickly.
21. The process of spreading something around.
22. A small coloured bag of thin rubber that you fill with air, used as a child's toy or a decoration.

Down

1. The general method of finding the position of objects by determining the time for an echo to return and the direction from which it returns, as by radar or sonar.
4. To damage or destroy something with fire.
6. The process of burning.
8. This word describes carbonated liquid that has bubbles of gas in it.
10. A simple musical instrument consisting of one or more tubes that you blow through.
12. The process of forcing air into something such as a liquid or a space.
14. To make regular repairs to a building, road or vehicle so that it stays in good condition.
15. An open mine where coal or minerals are dug out of the ground.
16. Power or vapour that is created when water is heated.



Glossary

absorb	/əb'zɔ:(r)b/ verb [T] the process by which something takes in another substance, form of energy, liquid or sound, to absorb sound, absorption.
accordion	/ə'kɔ:(r)diən/ noun [C] a musical instrument played by moving the ends of a box in and out while pressing keys and buttons.
aeration	/eə'reɪf(ə)n/ noun [U] the process of forcing air into something such as a liquid or a space.
air column	/eə(r) 'kɒləm/ noun [C] air we breathe and gases in the atmosphere rising up into the air in a straight line.
air pollution	/eə(r) pə'lu:(ə)n/ noun [U] the process of damaging the mixture of gases around the Earth with chemicals or other substances.
air pressure	/eə(r) 'prefə(r)/ noun [U] the amount of force that a gas or liquid produces in an area or container.
aircraft noise	/'eə(r),kra:ft nɔɪz/ noun [U] the loud or unpleasant sound a plane, helicopter, or other vehicle that flies produces.
argon	/'ɑ:(r)ɡɒn/ noun [U] a gas that is in the air and that does not produce a chemical reaction when mixed with other substances. It is sometimes used in electric lights.
asthma	/'æsmə/ noun [U] a medical condition that makes it difficult to breathe.
balloon	/bə'lu:n/ noun [C] a small coloured bag of thin rubber that you fill with air, used as a child's toy or a decoration or a similar shape made of glass, for example, that could be used in labs.
beat a drum	/bi:t eɪ drʌm/ verb phrase hit a musical instrument, consisting of a tight skin stretched over a round frame, that you hit with your hands or a stick several times making a regular pattern of sounds.
beautiful	/'bjʊ:təf(ə)l/ adj extremely attractive.
blocked	/blɒkd/ adj stopped, prevented from performing a specific activity.
blow	/bləʊ/ verb [T/I] move something by pushing out air from your mouth.
bounce off	/baʊns ɒf/ phrasal verb if light or sound bounces off a surface, it hits it and then moves away from it again.
Boyle	Robert Boyle, 1627--91, Irish scientist who helped to dissociate chemistry from alchemy. He established that air has weight and studied the behaviour of gases; author of The Sceptical Chymist (1661)
breathing apparatus	/'bri:ðɪŋ ,æpə'reɪtəs/ noun phrase the machines, tools, and equipment needed for inhaling and exhaling.
bubble of air	/'bʌb(ə)l ɒv eə(r)/ noun phrase a ball of the mixture of gases surrounding the Earth that we breathe.
burn	/bɜ:(r)n/ verb [T/I] damage or destroy something with fire.
carbon dioxide	/'kɑ:(r)bən daɪ'ɒksaɪd/ noun [U] a gas without colour or smell, produced when you breathe out or when substances containing carbon are burnt. The fact that the earth is getting hotter because of carbon dioxide in the atmosphere is called the greenhouse effect.
carbon monoxide	/'kɑ:(r)bən mə'nɒksaɪd/ noun [U] a poisonous gas with no colour or smell, produced by the engines of vehicles.

carbonated	/ˈkɑː(r)bəˌneɪtɪd/ adj a carbonated drink has small bubbles of air in it.
cause pollution	/kɔːz pəˈluːʃ(ə)n/ verb phrase make the process of damaging the air, water, or land with chemicals or other substances happen.
colourless	/ˈkʌlə(r)ləs/ adj having no colour.
combustion	/kəmˈbʌstʃ(ə)n/ noun [U] the process of burning.
composition of air	/ˌkɒmpəˈzɪʃ(ə)n ɒv eə(r)/ noun phrase the way that the gas we breathe is formed from separate substances.
compost	/ˈkɒmpəst/ noun [U] a mixture of decaying plants and vegetables that is added to soil to improve its quality.
condense	/kənˈdens/ verb [T/I] if gas or steam condenses, or if something condenses it, it changes into a liquid, usually when it becomes cooler.
cooling fan	/ˌkuːlɪŋ fæn/ noun phrase a machine with blades that turn and move the air in a room to make it feel less hot, rather cold, often in a pleasant way.
cotton fibres	/ˈkɒt(ə)n ˈfaɪbə(r)z/ noun phrase long thin pieces of a natural or artificial substance, similar to a thread or hair in shape. made from the white fibres of a plant called a cotton plant.
cough	/kɒf/ verb [I] force air up through your throat with a sudden noise, especially when you have a cold or when you want to get someone's attention.
create floods	/kriˈeɪt flʌdz/ verb phrase make, cause water to rise and cover certain areas.
cyclone	/ˈsaɪˌkləʊns/ noun [C] a severe storm in which the wind spins in a circle.
cymbal	/ˈsɪmb(ə)l/ noun plural a simple musical instrument consisting of a thin circular piece of metal that you play by hitting it with a stick or by hitting two of them against each other. A cymbal is a percussion instrument.
decibel	/ˈdesibels/ noun [C] unit for measuring how loud a sound is.
dew	/djuː/ noun [U] small drops of water that form on the ground during the night.
drum	/drʌm/ verb [T/I] make a continuous sound by hitting a surface.
dry out	/draɪ aʊt/ phrasal verb [T/I] if something dries out or is dried out, some or all the water comes out of it.
dust particles	/dʌst ˈpɑː(r)tɪk(ə)lz/ noun phrase extremely small pieces of dirt that cover surfaces inside buildings like a powder.
ear protectors	/ə(r) prəˈtektə(r)z/ noun phrase something which covers the two parts at the sides of your head that you hear with.
echo	/ˈekəʊ/ verb [T/I] if a noise echoes, it is repeated because the sound hits a surface and returns.
echolocation	/ˈekəʊləʊˈkeɪʃ(ə)n/ noun [C/U] the general method of locating objects by determining the time for an echo to return and the direction from which it returns, as by radar or sonar.
emission	/ɪˈmɪʃ(ə)nz/ noun [C] a substance, especially a gas, that goes into the air, often produced by vehicles and industrial processes.
erosion	/ɪˈrəʊʒ(ə)n/ noun [U] the process by which the surface of land or rock is gradually damaged by water, wind etc and begins to disappear.

evaporate	/ɪˈvæpəreɪt/ verb [T/I] if liquid evaporates or is evaporated, it changes into gas or steam.
exert pressure	/ɪgˈzɜː(r)t ˈpreʃə(r)/ verb phrase use influence, authority, or power in order to affect or achieve something.
exposure	/ɪkˈspəʊʒə(r)/ noun [C/U] the act of allowing something that was covered or hidden to be seen.
factory	/ˈfæktri/ noun [C] a building or group of buildings where large quantities of goods are produced using machines.
fan	/fæn/ noun [C] a machine with blades that turn and move the air in a room to make it feel less hot.
fertiliser	/ˈfɜː(r)təˌlaɪzə(r)/ noun [C/U] a natural or chemical substance added to soil in order to help plants grow.
finger board	/ˈfɪŋɡə(r) bɔː(r)d/ noun [C] the strip of wood on the neck against which the strings of a violin are stopped by the fingers.
finger hole	/ˈfɪŋɡə(r) həʊl/ [C] a series of openings on a wind instrument for changing the pitch by being opened or closed.
fizzy	/ˈfɪzi/ adj a fizzy liquid has bubbles of gas in it.
flick	/flɪk/ verb [T/I] make something move quickly and suddenly, especially with a quick movement of the hand.
flute	/fluːt/ noun [C] a musical instrument that you hold sideways to your mouth and play by blowing over a hole at one end as you press its keys. A flute is a woodwind instrument.
fractional distillation	/ˈfrækʃ(ə)nəl ˌdistɪˈleɪʃ(ə)n/ noun phrase the process of making a liquid more pure by heating it until it becomes a gas and then making it colder so that it becomes a liquid again.
fret	/fret/ noun [C] one of the raised lines across the narrow part of a guitar where you put your fingers to play the different notes.
fumes	/fjuːmz/ noun plural smoke or gas that has an unpleasant smell, especially harmful smoke or gas.
guitar	/ɡɪˈtɑː(r)/ noun [C] a musical instrument with six strings, used in a wide variety of musical styles. It can be acoustic or electric. Someone who plays the guitar is called a guitarist.
headache	/ˈhedeɪk/ noun [C] a pain in your head.
hollow tube	/ˈhələʊ tjuːb/ noun phrase a long, narrow, empty inside object similar to a pipe that liquid or gas can move through.
hot dry winds	/hɒt draɪ wɪndz/ noun phrase natural currents of very warm and non-humid air that move fast enough for you to feel it.
humid	/ˈhjuːmɪd/ adj hot and wet in a way that makes you feel uncomfortable.
light wind	/laɪt wɪnd/ noun phrase a natural current of air that move slowly enough for you to feel it.
liquid nitrogen	/ˈlɪkwɪd ˈnaɪtrədʒ(ə)n/ noun phrase nitrogen in a liquid state.
liquid	/ˈlɪkwɪdz/ noun [C/U] a substance that can flow, has no fixed shape, and is not a solid or a gas.
loud	/laʊd/ adj a sound that is strong and very easy to hear, noun [U] loudness.

low pitched	/ləʊ pɪtʃt/ adj phrase deep and sometimes difficult to hear sound.
maintain	/meɪn'teɪnd/ verb [T] make regular repairs to a building, road, vehicle etc so that it stays in good condition.
matchbox	/mætʃbɒks/ noun [C] a small box, usually of cardboard, for matches.
mist	/mɪst/ noun [C/U] a mass of small drops of water in the air close to the ground.
mixture	/'mɪkstʃə(r)/ noun [C/U] a combination of two or more different things, people, qualities etc.
monsoon winds	/mɒn'su:n wɪndz/ noun plural natural currents of air that move fast enough for you to feel it and cause heavy rain.
mouthpiece	/'maʊθ,pi:s/ noun [C] the part of something such as a musical instrument or a telephone that you put in or near your mouth.
musical instruments	/'mju:zɪk(ə)l 'ɪnstɹəmənts/ plural an object such as a piano, guitar, or drum that you use for playing music. Musical instruments are often simply called instruments.
natural filter	/'nætʃ(ə)rəl 'fɪltə(r)/ [C] something in nature such as trees and forests which acts as an instrument for 'cleaning' the air.
nitrogen	/'naɪtrədʒ(ə)n/ noun [U] a gas with no colour or smell that exists in large quantities in the air that we breathe.
noisy	/'nɔɪzi/ adj making a lot of noise.
oxygen	/'ɒksɪdʒ(ə)n/ noun [U] a gas in the air that has no smell or taste, and that all animals depend on to breathe.
particle	/'pɑ:(r)tɪk(ə)l/ noun [C] an extremely small piece or amount of something.
percussion instrument	/pə(r)'kʌʃ(ə)n 'ɪnstɹəmənt/ [C] musical instruments such as drums, cymbals, or rattles that you play by hitting or shaking them. Someone who plays a percussion instrument is called a percussionist.
permanently	/'pɜ:(r)mənəntli/ adv forever, all the time, constantly.
pin	/pɪn/ noun [C] a small thin piece of metal with a sharp point, used for holding cloth in place while you are sewing.
pipe	/paɪp/ nouns [C] a simple musical instrument consisting of one or more tubes that you blow through.
pitch	/pɪtʃ/ noun [C/U] the high or low quality of a sound.
pluck	/plʌk/ verb [T/I] pull the strings of a musical instrument with your fingers in order to produce a sound.
pollution	/pə'lu:ʃ(ə)n/ noun [U] the process of damaging the air, water, or land with chemicals or other substances.
pores	/pɔ:(r)z/ noun plural one of the very small holes in your skin that sweat can pass through.
press down	/pres daʊn/ phrasal verb push something such as a button or switch in order to make a piece of equipment start working.
pressure	/'preʃə(r)/ noun [C/U] the amount of force that a gas or liquid produces in an area or container.
propagation	/,prɒpə'geɪʃ(ə)n/ noun [U] the process of spreading something around.

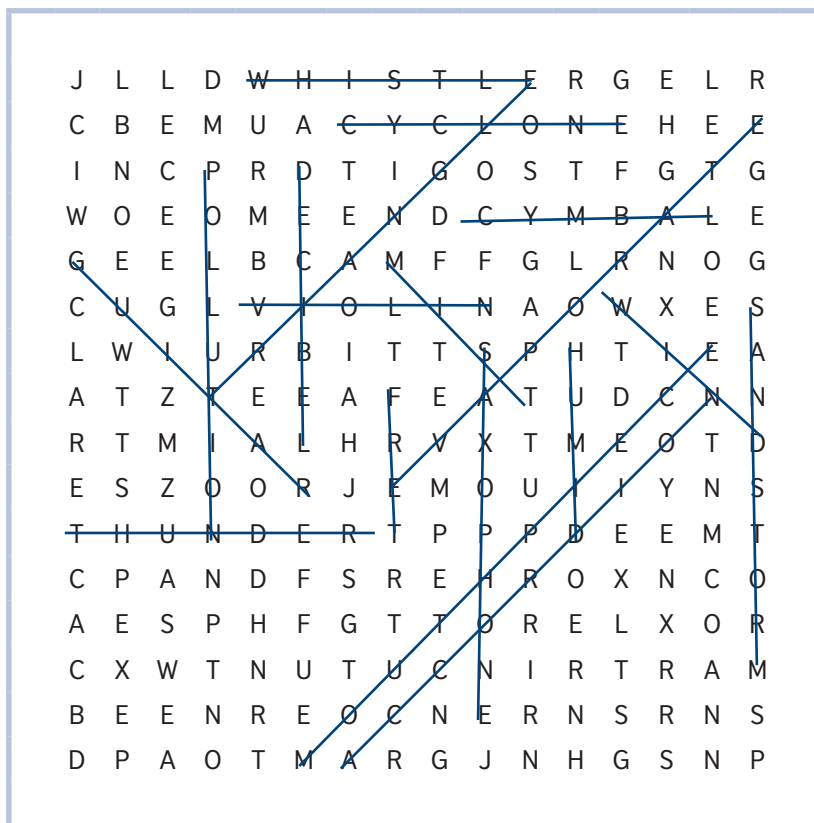
push	/pʊʃ/ verb [T/I] encourage or force someone in a determined way to do something they do not want to do.
quarry	/ˈkwɒri/ noun [C] a place where coal or minerals are dug out of the ground.
rain clouds	/reɪn klaʊdz/ noun plural a white or grey mass of very small drops of water in the sky.
rapid	/ˈræpɪd/ adj happening, moving, or acting quickly.
recycle	/riːˈsaɪk(ə)/ verb [T] reprocess waste materials such as bottles so that they can be used again.
reduce	/riˈdjuːs/ verb [T] make something smaller or less in size, amount, importance etc.
reflect	/riˈflekt/ verb [T/I] if a surface reflects something like an image or sound then that something bounces off the surface.
reflection	/riˈflekʃ(ə)n/ noun [C/U] an image that you see when you look in a mirror or other shiny surface.
released	/riˈliːsd/ adj allow a substance or energy spread into the area or atmosphere around it, especially as part of a chemical reaction.
respiration	/ˌrespəˈreɪʃ(ə)n/ noun [U] the process of breathing air in and out.
rubber bands	/ˈrʌbə(r) bænd/ noun plural a thin circle of rubber used for holding things together.
rumble of thunder	/ˈrʌmb(ə)l ɒv ˈθʌndə(r)/ noun phrase a continuous deep sound that you sometimes hear in the sky during a storm.
safety	/səʊnd ˈseɪfti/ noun phrase the fact that a thing is not dangerous to do or use.
sand	/sænd/ noun [U] a loose pale brown substance that you find at a beach or in the desert, formed from very small pieces of rock.
sandstorms	/ˈsæn(d),stɔː(r)mz/ noun plural a strong wind in the desert that blows clouds of sand in the air.
saxophone	/ˈsæksəˌfəʊnz/ noun [C] a musical instrument consisting of a long curved metal tube that you play by blowing into it as you press its keys with your fingers.
seasonal winds	/ˈsiːz(ə)nəl wɪnd/ noun phrase plural natural currents of air that move fast enough for you to feel them, available only during a particular time of year.
smoking	/ˈsməʊkɪŋ/ noun [U] the activity of breathing smoke from cigarettes, pipes etc into your mouth and lungs.
soft	/sɒft/ adj easy to press or shape and is not hard or firm.
sonar	/ˈsəʊnɑː(r)/ noun [U] a piece of equipment on a ship that measures the depth of water and shows the position of objects under the water.
sound pollution	/saʊnd pəˈluːʃ(ə)n/ noun phrase the process of damaging the air with unpleasant, continuous, loud noise.
sound wave	/saʊnd weɪv/ noun phrase a movement in the air that carries a noise to your ear.
space	/speɪs/ noun [C/U] empty or available area.
spoil the environment	/spɔɪl ðə ɪnˈvaɪənmənt/ verb phrase damage, affect the natural world around us in a way that makes it worse, less attractive, or less enjoyable.

sprinkle	/ˈsprɪŋk(ə)/ verb [T] shake small amounts of a liquid or a substance such as sugar over the surface of something.
squash	/skwɒʃ/ verb [T/I] damage something by pressing or crushing it and making it lose its normal shape.
steam	/sti:m/ noun [U] power that is created when water is heated.
storage	/ˈstɔːrɪdʒ/ noun [U] the act of storing something.
storm	/stɔː(r)mz/ noun [C] an occasion when a lot of rain falls very quickly, often with very strong winds or thunder and lightning.
stretch	/stretʃ/ verb [T/I] pull something to make it longer or wider.
string instruments	/striŋ ˈɪnstɹəmənts/ noun phrase plural are musical instruments that produce sound by means of vibrating cords or strings.
strong wind	/strɒŋ wɪnd/ noun phrase powerful natural currents of air that move fast enough for you to feel it.
swirling air	/swɜː(r)lɪŋ eə(r)/ noun phrase the space around things and above the ground, moving quickly in circles, such as a wind.
tap	/tæp/ verb [T/I] to touch someone or something gently and to move them slightly, or to make a soft knocking sound.
tension	/ˈtenʃ(ə)n/ noun [C/U] the feeling of being so nervous or worried that you cannot relax.
thread	/θred/ noun [C/U] a long thin fibre used for sewing pieces of cloth together or for weaving.
tick	/tɪk/ verb [T/I] mark something with the symbol □ to show that it is correct or that you have dealt with it. The American word is check.
tin drum	/tɪn dɹʌm/ noun phrase a circular part of a machine such as a washing machine, made of a soft light silver metal, often used for covering iron or steel.
to and fro	/ˌtuː ən ˈfrəʊ/ adv in one direction and then back again, up and down.
transmit disease	/trænzˈmɪt dɪˈziːz/ verb phrase spread an illness from one person to another.
trapped	/træpt/ adj prevent someone from leaving a place, especially a dangerous place.
triangle	/ˈtraɪæŋɡ(ə)/ noun a musical instrument consisting of a metal triangle that you hit with a metal bar.
twang	/twæŋ/ noun [C] the sound that is made by a tight string when it is pulled and then returns to its original position.
underwater	/ˌʌndə(r)ˈwɔːtə(r)/ adj existing, happening, or used under the surface of water.
vacuum	/ˈvækjʊəm/ noun [C] a space that has had all the air and any other gases removed from it.
vibrate	/vaɪˈbreɪt/ verb [I] shake very quickly with small movements.
vibration	/vaɪˈbreɪʃ(ə)n/ noun [C/U] a very small, fast, and continuous shaking movement.
violins	/ˌvaɪəˈlɪn/ noun plural a musical instrument that you hold under your chin and play by pulling a long object called a bow across its strings. Someone who plays a violin is called a violinist.

vocal cord	/ˈvəʊk(ə)l kɔː(r)d/ noun phrase membranes in the human throat responsible for producing sound.
water vapour	/ˈwɔːtə(r) ˈveɪpə(r)/ noun phrase very small drops of water in the air that make it feel slightly wet.
whistle	/ˈwɪs(ə)l/ verb [T/I] to make a tune or musical notes by forcing air through your mouth.
wind	/wind/ noun [C/U] a natural current of air that moves fast enough for you to feel it.
wind instrument	/wind ˈɪnstɹəmənt/ noun [C] a musical instrument that contains some type of resonator (usually a tube), in which a column of air is vibrated by the player blowing.
wind speed	/wind spiːd/ [C/U] the rate at which strong currents of air move.

Key:

1. a) 7, 9, b) 2, 5, c) 1, 8, d) 3, 4, 6
2. a) sounds, b) to and fro, c) squashing, d) pressure, e) pressure, f) pressure, g) sound, h) sound wave, i) sound, j) underwater, k) sounds
3. a) 4, b) 3, c) 8, d) 7, e) 2, f) 6, g) 1, h) 5
4. a) spoil, b) headache, c) noise, d) loudness, e) Noisy, f) protectors, g) absorb, h) exposure, i) permanently
5. a) 2, b) 1, c) 4, d) 3
6. a) argon, b) oxygen, c) carbon dioxide, d) nitrogen
7. **nitrogen:** f), g), b); **oxygen:** a), d); **carbon dioxide:** e), g)
8. a) 3, b) 1, c) 2, d) 5, e) 4
9. a) cough, b) asthma, c) disease, d) cotton, e) particles, f) vacuum, g) blocked, h) trap, i) reduces
- 10.



11. **Across:** 2. smoking, 3. matchbox, 5. reflect, 7. fumes, 9. push, 11. fan, 13. compost, 17. recycle, 18. sonar, 19. respiration, 20. rapid, 21. propagation, 22. balloon; **Down:** 1. echolocation, 4. burn, 6. combustion, 8. fizzy, 10. pipe, 12. aeration, 14. maintain, 15. quarry, 16. steam