

THE CLIL RESOURCE PACK

**Photocopiable and
Interactive Whiteboard
Activities for Primary
and Lower Secondary
Teachers**

**By Margaret Grieson
and Wendy Superfine**



How do you breathe?

Fact box

The circulatory system

- This is the heart and all the tubes that carry blood around the body in 2 circles.

How does it work?

- The heart pumps blood to the lungs.
- The blood takes in oxygen and returns to the heart.
- The heart pumps the oxygenated blood to the rest of the body and then back to the heart.
- Most arteries carry blood away from the heart.
- Most veins carry blood to the heart.

Aims

- To learn about the circulatory system.
- To revise organs of the body.

Language

- Directions: *from, to*
- Verbs: *carry, exchange, protect, pump, take, travel*
- Vocabulary: *artery, blood, bone, carbon dioxide, false, gas, heart, lungs, oxygen, pulse, pulse rate, rest of the body, true, vein*

Extra materials

- 1 copy of the Activity page per pupil, IWB
- Red and blue coloured pencils

Warm up

- 1 Revise body vocabulary from Lessons 1.1a and 1.1b.
- 2 On the IWB, click on the Show more button to display a diagram of the circulatory system. Read the text in the Fact box above to the class and use the diagram to illustrate the information.
- 3 Ask *What does your heart do? What do your lungs do?*
- 4 Tell the pupils to put a hand on their chest and feel their heart beating.
- 5 Tell them to take a deep breath and feel their lungs moving.
- 6 Now tell them to stand up and run on the spot for a minute.
- 7 Ask *Can you feel your heart beating? Does it feel faster or slower?*

Procedure

- 1 Give out the Activity sheets and teach/revise *true* and *false*.
- 2 Read through the sentences in activity 1 with the pupils. Tell them to decide if each sentence is true or false and to write *T* by the true sentences and *F* by the false ones.
- 3 Ask pupils to correct the false sentences.
- 4 Check the answers to activity 1 by displaying the IWB and completing the activity with the class.

Follow up

- 1 Look on the IWB at the diagram of the circulatory system again and discuss how the blood travelling from the lungs contains oxygen and the blood travelling to the lungs contains carbon dioxide. Close the IWB.

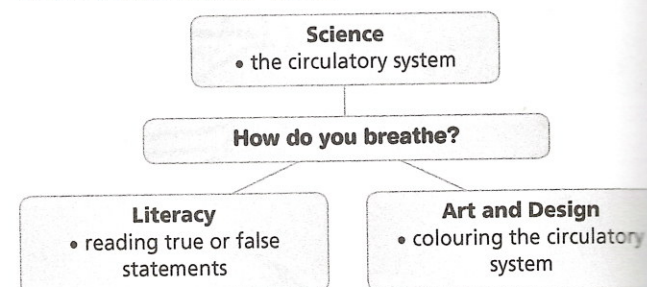
- 2 Tell the pupils to look at activity 2 on the Activity sheet and read the labels. Read the colouring instructions with the class and make sure they understand them. Explain that the right side of the 'rest of the body' will be red and the left side will be blue. Tell the pupils to colour their diagrams.
- 3 Use the IWB diagram of the circulatory system for pupils to check their own.

Useful websites

- www.bbc.co.uk/schools/ks2bitesize/science/living_things/keeping_healthy/play.shtml
Click OK
- www.primaryresources.co.uk/science/powerpoint/scienceheart.ppt
Scroll down to view 15 slides
- www.primaryresources.co.uk/science/science2b.htm#circulation
Click on the resources listed under *Circulation*
- www.collaborativelearning.org/bloodcirculation.pdf
Photocopiable games

Search terms: heart, lungs, circulation

Cross curricular links



How do you breathe?

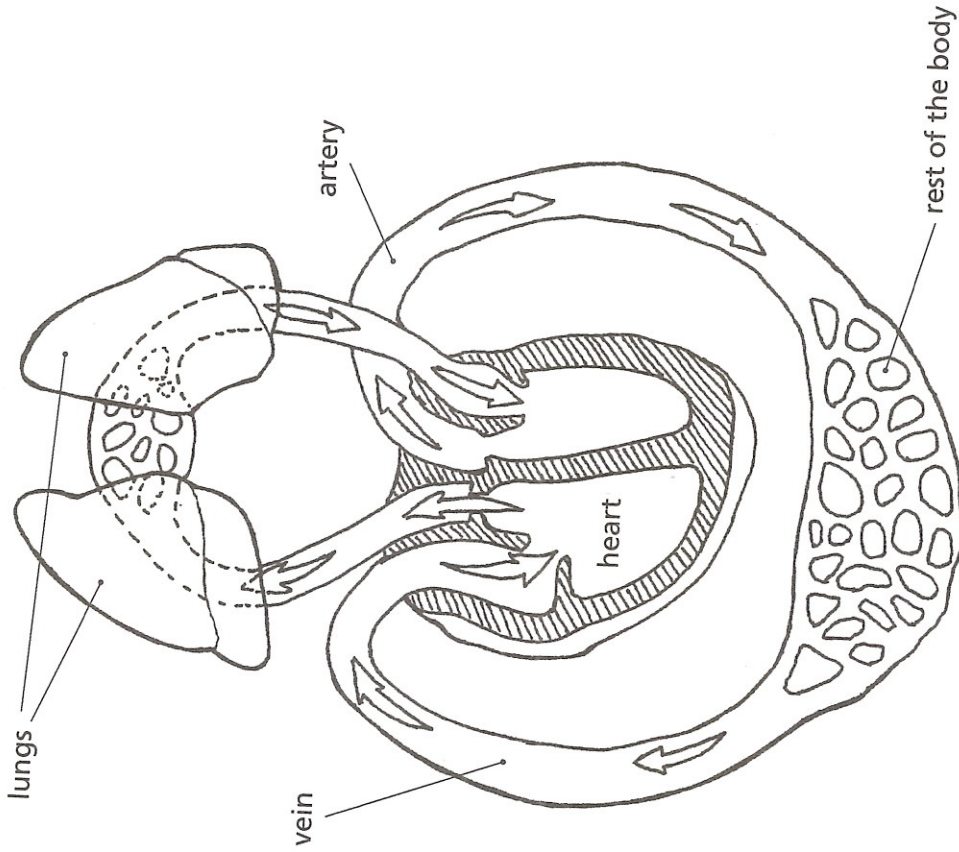
1 Are these sentences true or false?

Write T or F.

- 1 Your heart pumps blood around your body. _____
- 2 Your blood carries carbon dioxide to all parts of your body. _____
- 3 Your lungs exchange gases. _____
- 4 Blood travels around your body. _____
- 5 The ribs are the bones that protect the heart and lungs. _____
- 6 Exercise and healthy eating are good for your heart. _____
- 7 Children have a slower pulse rate than adults. _____

Correct the false sentences.

2 Your circulatory system



Colour the top of the lungs and the right side of the heart red.

Colour the blood going away from the heart red.

Colour the blood going to the heart blue.

Colour the left side of the heart and the bottom of the lungs blue.

Measure your pulse

Fact box

- Your pulse is the beat your heart makes as it pumps blood around your body.
- Your heart beats faster or slower depending on what you are doing.
- You can find out how fast your heart is beating. Put the first 2 fingers of your left hand on the inside of your right wrist or on your neck below your chin. Feel the pulse and count the number of beats your heart makes in 1 minute.

Aims

- To understand the effects of exercise and rest on the pulse rate.
- To make predictions.
- To make a fair test.
- To record results.

Language

- Verbs: *beat, measure*
- Vocabulary: *conclusion, energy, exercise, prediction, pulse, rest*

Extra materials

- 1 copy of the Activity page per pupil, IWB
- a large clock with a second hand

Warm up

- 1 Briefly revise the circulatory system from Lesson 1.3a.
- 2 Discuss why we do exercise. Ask the pupils to write down activities that use energy. Invite pupils to share their ideas with the class. Ask *How do you feel after you have done some exercise? What happens to your body when you exercise? What happens to your pulse rate?*

Procedure

- 1 Write the text from the Fact box on the board. Read the facts with the class.
- 2 Ask *What is pulse rate? How can we measure our pulse rate?* Put the pupils into pairs, A and B. Explain that they are going to measure and record their partner's pulse rate at rest and then after different exercise.
- 3 Give out the Activity sheets. Look at activity 1 and tell pupils to write *sitting* in the first box.
- 4 Make sure the clock is visible. Demonstrate how to count a pulse for a minute using the second hand.
- 5 Tell the pupils to take turns to measure their partner's pulse while their partner is sitting down. Each pupil records his/her own pulse on the table.
- 6 Ask the pupils to write *running* in the box below *sitting*. Tell them to predict if their pulse rate will go up or down after running, and to write 2 in the time box.
- 7 Tell pupil B to go outside and run around the playground for 2 minutes.
- 8 Tell pupil A to measure pupil B's pulse as soon as pupil B returns. Repeat to find pupil A's pulse after running. Each pupil records his/her own pulse on the table.
- 9 Tell the pupils to choose two other activities and repeat steps 6 to 8 above for each of them.
- 10 Ask several pupils *Which is your fastest pulse rate? Which is your slowest pulse rate?*
- 11 Tell them to fill in the Conclusion on the Activity sheet. Discuss the answers with the class.

- 12 Read first the question in activity 2 then display IWB Task 1 and complete the activity with the class.

- 13 Tell the pupils to complete the table on the Activity sheet and then discuss the answers with the class.

Follow up

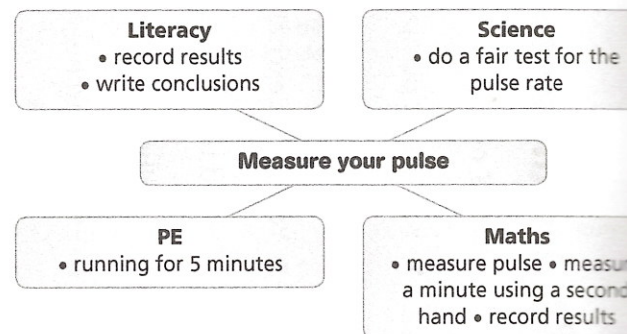
- 1 Look at activity 3. Ask 8 pupils each to read a word from the list. After each word, ask the class to spell out the letters, e.g. *v, e, i, n*.
- 2 Tell them to look in all directions (like the arrows) to find and mark the words.
- 3 Display IWB Task 2 and complete the activity with the class for pupils to check their answers.

Useful websites

- www.primaryresources.co.uk/science/pdfs/pulse_rate_LF.pdf
- www.bbc.co.uk/schools/ks2bitesize/science/living_things/keeping_healthy/play.shtml
Click OK.
- kidshealth.org/kid
Click on *How the Body Works*, then on the different organs. For Lower Secondary

Search terms: pulse rate, my body, exercise

Cross curricular links



Measure your pulse

1 My pulse rate

Complete the table, then the conclusion.

Exercise/Activity	Prediction (up/down)	Time (minutes)	Pulse rate		Did it go up or down?	Was your prediction right?
			before	after		

Conclusion

When I exercise, my pulse rate goes _____. When I rest it goes _____.

My fastest pulse rate was _____ per minute. The activity was _____.





My slowest pulse rate was _____ per minute. The activity was _____.

When I exercise, my heart beats faster because my body and muscles need more _____.

2 Joe's heart beat

Which activity will make Joe's heart beat the fastest?

Write the correct pulse rate for each activity.

				beats per minute			
				67	78	98	132
running _____	sitting _____	walking _____	sleeping _____	67	78	98	132

3 Find these words:

heart

lungs

vein

artery

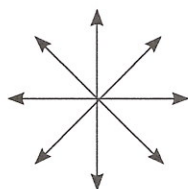
body

oxygen

carbon dioxide

pulse

Look:



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

The food chain

Fact box

- All food chains start with the sun.
- The sun is a producer.
- A plant absorbs light from the sun.
- A plant is a consumer.
- An animal eats the plant.
- A consumer usually eats the producer.

Aims

- To order living things in simple food chains.
- To observe living things existing together in a habitat.

Language

- Ordinals: *1st, 2nd, 3rd, 4th, 5th*; Sequencing: *First, Next, Then, Last*
- Vocabulary: *animals, butter, carnivores, cheese, consumer, ecosystem, food chain, herbivores, insects, milk, plants, producer, sometimes, usually, yoghurt*

Extra materials

- 1 copy of the Activity page per pupil, IWB
- card, scissors, thread, glue sticks, sticky tape, coloured pencils, book: *There was an old woman who swallowed a fly*, illustrator: Pam Adams, Child's Play (International) Ltd, 2000, ISBN-10: 0859537277

Warm up

- 1 Ask *What have you eaten today?* Talk about how we get our energy and what we need to move and grow.
- 2 Ask *Where does our food come from?* Write on the board: *from animals, from the ground, from plants*. Ask pupils to name a food they know and write it under the correct heading.
- 3 Write *milk, cheese, butter, yoghurt* on the board. Ask *What are these made of?* Elicit *Milk*. Ask *Where does milk come from?* Elicit *Cows*. Ask *What do cows eat?* Elicit *Grass*. Explain that this is a food chain.
- 4 Talk about habitats (see Lesson 3.1a) and how food chains are different in different places.

Procedure

- 1 Give out the Activity sheets. Look at activity 1. Ask the pupils to name the pictures in the top row.
- 2 Tell them to draw arrows to show the order in which the energy/food is consumed.
- 3 Explain that food chains usually start with the sun, then a plant. The sun is called a producer and plants use energy from the sun to grow. The cow eats grass so it is a consumer. It gives us milk so it is a producer, too. Humans drink milk and eat meat from a cow, so they are consumers.
- 4 Pupils colour the pictures and cut out the cards. In groups of 4, using 1 or 2 sets, pupils mix the cards and spread them face down on the table. Taking turns to pick a card, and starting with the 1st card of a food chain, they collect all cards in the chain, replacing any others. When a chain is complete, they begin another. When all cards are taken, the person with the most complete chains in the correct order wins.
- 5 Ask 4 pupils to stand facing the class, each displaying a card from one food chain. Ask *Which comes first/second/third/last?* until they are standing in order. Repeat with other pupils and food chains.

- 6 Display the IWB for the pupils to complete the activity.

Follow up

- 1 Look at activity 2 on the Activity sheet. Read the headings with the class. Revise the meanings of *producer* and *consumer*.
- 2 Pupils draw and colour their own food chain. Ask them to say if each picture shows a producer or a consumer.
- 3 Demonstrate how to cut out the pictures to make a mobile. Thread them in order, with the sun at the top.
- 4 If time allows, read the poem *There was an old woman who swallowed a fly*. Ask *Can these creatures eat each other?* Talk about the rhyming words *fly/why, spider/inside her*, etc.

Useful website

- www.rspb.org.uk/youth/learn
Click *Food chains*

Search term: food chains

Cross curricular links

Literacy
• poem: *There was an old woman who swallowed a fly*

Science
• food chains • animals, plants, insects, carnivores, herbivores

The food chain

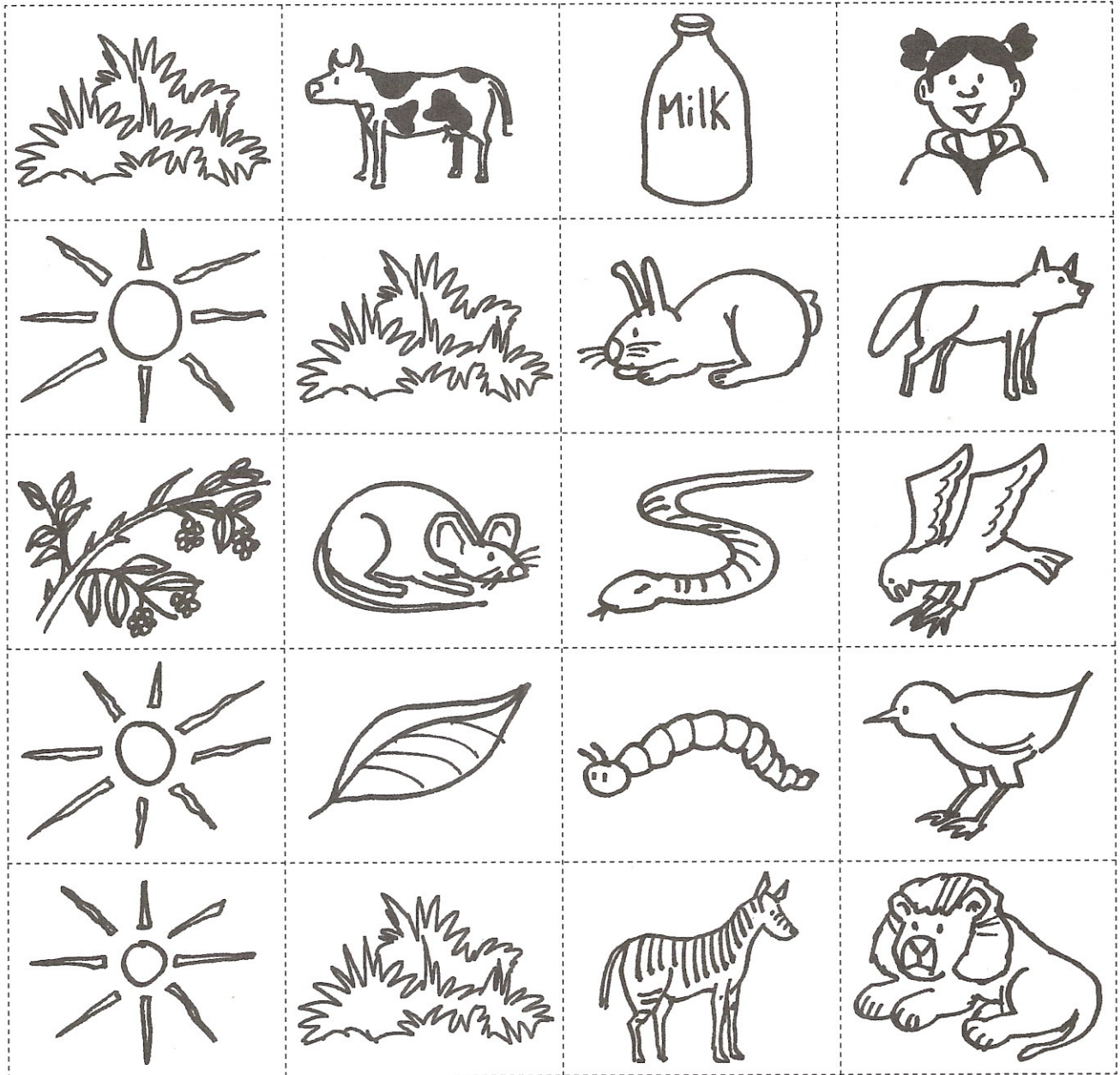
Maths
• ordinals: 1st, 2nd, 3rd

Art and Design
• cut out food chain cards
• draw a food chain
• make a mobile

Food chain cards

1 Play the food chain game

Add arrows. Colour and cut out.



2 Draw your own food chain. Make a mobile

← Producers →
sun plant

← Consumers →
animal herbivore animal carnivore

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The life cycle of a bean plant

Fact box

- Stalk is another word for stem.
- Beans and peas are seeds.
- There are hundreds of kinds of beans, e.g. broad beans, runner beans, mung beans.
- Most bean plants live for just a few weeks or months.

Aim

- To recognise and understand the life cycle of a bean plant.

Language

- Sequencing: *first, next, last*
- Vocabulary: *bean, brown, dead, down, flower, green, ground, grow, leaf, leaves, life cycle, plant, pod, root, seed, shoot, soil, stage, stem, up*

Extra materials

- 1 copy of the Activity page per pupil, Audio Tracks 14 & 15, Audio texts, IWB
- plain paper, scissors, glue sticks, green and brown pencil crayons
- www.bbc.co.uk/learningzone/clips/ Type 2260 then click *SEARCH*, then *Plant growth* to watch beans growing

Warm up

- 1 If possible, watch the science clip of beans growing.
- 2 Display the IWB and complete the activity with the class.
- 3 Give out the Activity sheets. Point to and read the labels. Pupils follow and repeat. Ask when the plant makes new bean seeds.
- 4 Draw a complete bean plant life cycle on the board (see picture 1 on page 51). Explain that it is like a circle: a seed grows into a plant, makes new seeds, seeds grow into new plants. The circle is called a life cycle.
- 5 Read the Audio text for Track 14. Play Audio Track 14. Pupils join in the song and invent hand actions to match the words.

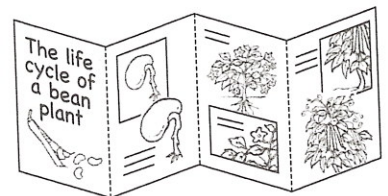
Procedure

- 1 Give out the plain paper. Play Audio Track 15.
- 2 Pupils listen, repeat and point to the pictures on the Activity sheet. Ask *Which is stage 1?* Pupils point to stage 1.
- 3 Put pupils in pairs. Pupils take turns to ask *Which is the next stage?* and *Which is stage 1/2/3/4/5/6?* and to point. (Make sure pupils understand that the dead plant is stage 6, when new bean seeds fall out of the seed pods.)
- 4 Pupils make a diagram of the life cycle: they colour the pictures green and brown, cut out and glue them in order on the plain paper, cut out and glue the word boxes as labels and draw clockwise arrows.
- 5 Show the class your own completed diagram to check their answers.

Follow up

- 1 Pupils work in pairs to ask and answer the questions on the sheet, e.g. *What is the first/next/last stage?*
- 2 Repeat the song on Audio Track 14 (with text), *The life of a plant goes round and round*, with actions.

- 3 Grow bean plants in the classroom. Pupils use drawing photos and measurements to record growth.

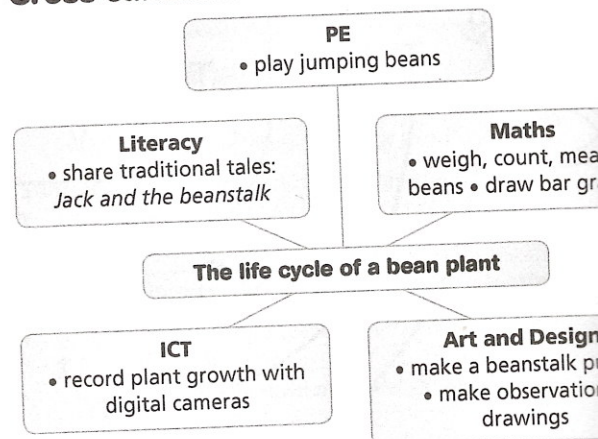


Useful websites (see also Extra materials above)

- www.bbc.co.uk/learningzone/clips
Type 69 then click *SEARCH*, then *Requirements for healthy plant growth*
- www.bbc.co.uk/schools/scienceclips
Click *enter*, then *Ages 5-6*, then *Growing plants*
- www.zephyrus.co.uk
Click *Biology*, then *ACTIVITIES*, then *LIFE STORY OF THE BEAN*

Search term: life cycle of a bean

Cross curricular links

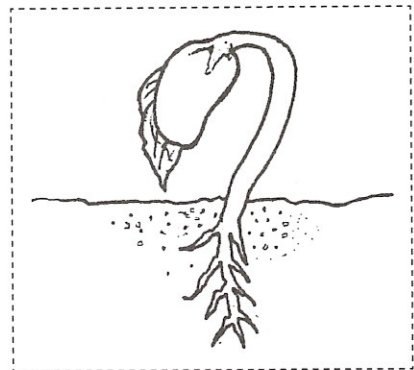
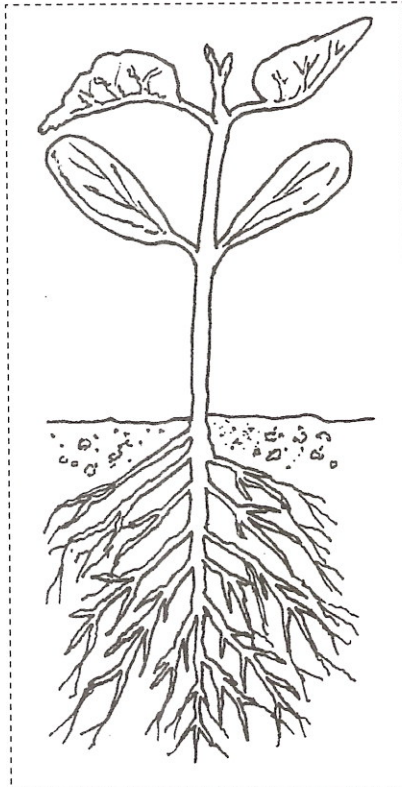
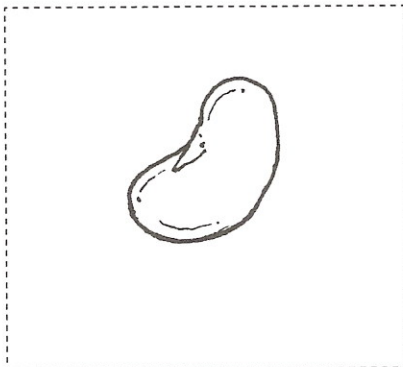
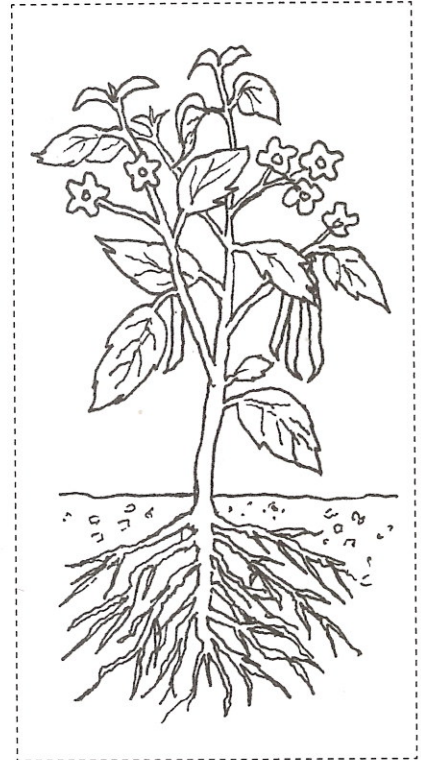
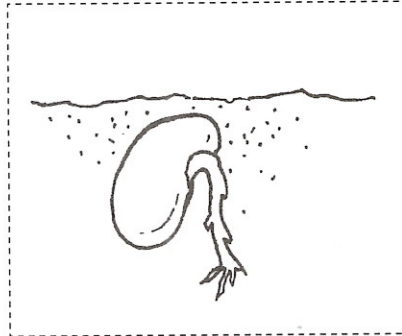


The life cycle of a bean plant

1

T15

Cut, order and label



root and shoot

root, stem and leaves

bean

root, stem, leaves,
flowers and seed pods

root

dead plant with
new bean seeds

2 Ask and answer

Some questions to ask your partner:

- 1 What grows first, the root or the shoot?
- 2 What grows next?
- 3 What grows last, the seed pods or the flowers?
- 4 What does the dead plant look like?

Lesson
3b

What happens when a habitat is changed?

Fact box

- An environment contains many habitats, e.g. tree, pond, grass.
- Most young are born when the weather is good and food is easy to find.
- Droughts, floods and low temperatures cause natural changes to habitats.
- Man's activities – building, logging, fires, oil spills, pollution – change habitats. Many animals cannot adapt quickly to these changes.
- Sparrows live for 2 to 3 years.

Aims

- To recognise the way life cycles are affected by environmental changes.
- To understand the difference between fact and opinion.

Language

- Persuasive texts; Letter writing; Conditional: *could, would*
- Vocabulary: *affect, bird, car park, environment, fact, newspaper, opinion, persuade*

Extra materials

- 1 copy of the Activity page per pupil, Audio Tracks 23 – 26, Audio texts, IWB

Warm up

- 1 Write *habitat* on the board. Ask for definitions.
- 2 Display Audio text for Track 23, play Audio Track 23 and ask pupils to listen and follow. Discuss with the class. (Possible answers: polar bear, penguin, seal.)
- 3 Discuss what could happen to the life cycle if there was no snow.
- 4 Display Audio text for Track 24, play Audio Track 24 and ask pupils to listen and follow. Discuss with the class. (Possible answers: bison, rabbit, kangaroo.)
- 5 Ask and discuss: *What could happen if the habitat changed and there was no rain, or a town was built?*
- 6 Ask why most birds live in trees and why they lay their eggs in the spring.

Procedure

- 1 Hand out the Activity sheets. Play Audio Track 25. Pupils listen and follow. Ask what is going to happen.
- 2 Play Audio Track 26. Pupils listen and follow. Ask what Tom and Anna want to happen.
- 3 Write on the board: *Tom and Anna want to persuade people to keep the park for the birds.* Explain *persuade*. List examples of Tom and Anna's ideas from the letter.
- 4 Allow pupils 5 minutes to underline the persuasive words and phrases and to copy them into the table.
- 5 Write *fact* and *opinion* on the board. Explain the difference between facts and opinions.
- 6 Replay/Reread the newspaper article and letter and ask the pupils for examples of facts and opinions.
- 7 Display the IWB for the pupils to complete the activity.
- 8 Allow 5 to 10 minutes for the pupils to complete the table.

Follow up

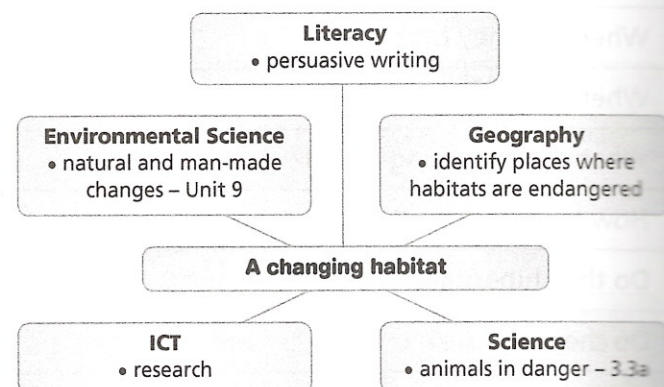
- 1 Discuss how Tom and Anna's letter could be improved.
- 2 Write a short persuasive letter or a blog page asking for action to save the habitat of an endangered animal.
- 3 Find out about environmental projects in your area.

Useful websites

- www.sparrowcam.com
Click *SparrowCam Videos*
- www.bbc.co.uk/learningzone/clips
Type 7544, 7521, 2309 or 8987 then click *SEARCH* to watch birds/animals in their habitats
- www.bbc.co.uk/schools/scienceclips/ages/6_7/plants_animals_env.shtml
- www.rspb.org.uk/youth
Click on *PLAY*, on *DISCOVER* and/or on *LEARN*
- www.bbc.co.uk/schools/ks2bitesize/english/writing
Use the activities at *Argument*

Search terms: birds + habitats, conservation

Cross curricular links



What happens when a habitat is changed?

Read the newspaper



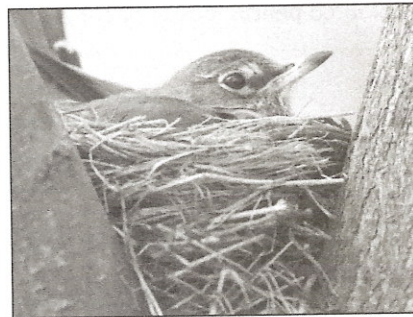
T25 The End of the Old Park

This is your last chance to go to the Old Park. Next week the Old Park will be turned into a car park. The beautiful 100-year-old trees will be cut down. The grass and flower beds will be dug up. In two weeks' time there will be space for 50 cars to park but there will be no green space for people, birds and animals to enjoy.

T26 Dear Readers,

We think it is a bad thing that the Old Park is going to be made into a car park. We think it should be stopped. We would like the park to stay as it is now, because so many birds live there. It is a good habitat for them in the spring.

If we must have a new car park why do the trees have to be cut down so soon? Many birds have nests in those trees. Many



eggs have hatched and the baby birds need to eat the caterpillars that are on the flower beds now. It is too late for them to start their life cycle again in another

place. Many small birds only live two years so next year there will be no new adults to lay eggs. We shall miss having the birds around.

If the park must be destroyed please, please, please help us to find a way to keep the trees and flowers for a few more weeks until this year's baby birds can leave the nest.

Yours faithfully,
Tom and Anna

Write some of the persuasive words and phrases from the letter here:

Reread the newspaper article and the letter and write 2 facts and 2 opinions here:

Fact
Fact
Opinion
Opinion

Magnetic force

Fact box

- Magnetism is a force.
- Magnets are surrounded by a magnetic field.
- The opposite ends of a magnet are called poles.
- Opposite poles attract. Like poles repel.

Aim

- To understand that when magnets attract and repel, these are forces.

Language

- Labels and captions
- Vocabulary: *attract, force, like, magnet, magnetic, magnetism, north, opposite, pole, repel, south*

Extra materials

- 1 copy of the Activity page per pupil, IWB
- www.bbc.co.uk/learningzone/clips/ Type 2188, then click *SEARCH*
- paper, red and blue pencils, scissors, glue sticks, 2 bar magnets (with north pole marked) per pair of pupils

Warm up

- 1 Write on the board: *Forces make things start or stop or go faster or slower.*
- 2 Ask the pupils to name a force. List their answers on the board (*pulls, pushes, friction*).
- 3 Write *magnetism* on the board and explain that magnetism is also a force.
- 4 Visit a website, such as the one listed above, to watch a video clip about magnets.
- 5 Put the pupils into pairs. Give each pair 2 magnets and allow 2 or 3 minutes for experiment and discussion.

Procedure

- 1 Hold up a bar magnet and explain that the ends of a magnet are called poles. Point to and name the north pole, then the south pole and ask the pupils to do the same with their magnets.
- 2 Give out 1 Activity sheet per pair of pupils. Ask each pair to place 1 magnet on the picture of magnet 1, keeping the south pole on the left. Now, ask them to watch what happens when they put the second magnet on picture 2, again keeping the south pole on the left. Ask different pupils what happened. (If the magnets did not move together, tell pupils to push them 2 or 3 millimetres closer and watch again.) Explain that magnetism pulls the magnets together. Write on the board: *The north pole attracts the south pole.*
- 3 Ask the pupils to put the two north poles together and discuss what happens. Write on the board: *The north pole repels the north pole.* Repeat this experiment with the 2 south poles together and write a 3rd sentence.
- 4 Ask a pupil to read the 3 sentences on the Activity sheet. Ask what the words *like* and *opposite* mean.
- 5 Give out the remaining Activity sheets and the plain paper. Ask the pupils to colour the south poles on all the magnet pictures blue and the north poles red (or match the colours on the class magnets) and then to cut out the title, the coloured magnet pictures and the labels.

- 6 Tell them to make a poster: glue the title at the top, match the pictures and labels and stick them on below. (They can use their magnets to check which pairs of poles attract or repel.)

Follow up

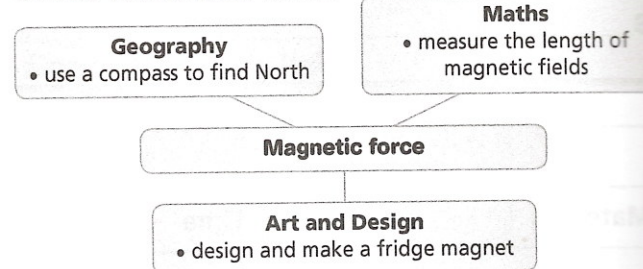
- 1 Pupils experiment with their magnets to answer the questions in activity 2. Discuss the answers in class.
- 2 Display the IWB and complete the crossword with the class.
- 3 Make a list of uses for magnets at home and at school.

Useful websites (see also Extra materials above)

- www.bbc.co.uk/learningzone/clips
Type 2349, 2186, 2187 or 2185, click *SEARCH* and watch the clips
- www.bbc.co.uk/schools/scienceclips/ages/7_8/magnets_springs.shtml
- www.engineeringinteract.org/resources/parkworldplot/flash/concepts/magneticforces.htm

Search terms: magnets + springs, magnetic materials

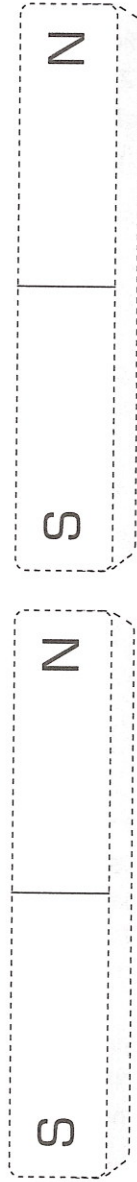
Cross curricular links



Magnetic force

1 Colour and cut out. Match and stick

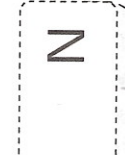
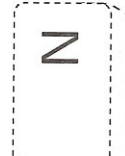
Magnets and magnetism



Opposite poles attract

Like poles repel

Like poles repel



2 Find out, then answer the questions

- 1 What happens when you put 2 north poles together? _____
- 2 Can you put 3 magnets together, pole to pole, in a line? Yes/No
- 3 If you can, in which order did you put the magnets? Label the poles with S or N

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Working with magnets

Fact box

- Magnetism is a force.
- Magnets are surrounded by a magnetic field.
- The opposite ends of a magnet are called poles.
- Opposite poles attract. Like poles repel.
- Magnets attract anything made of iron, e.g. steel.
- Magnets also attract alloys of nickel and cobalt.

Aim

- To investigate magnetic forces.

Language

- Vocabulary: *alloy, attract, cobalt, field, furthest, iron, magnet, magnetic, magnetism, nickel, paper clips, repel, ruler, steel, strength, stronger, strongest*

Extra materials

- 1 copy of the Activity page per pupil, Audio Tracks 44 – 46, IWB
- www.bbc.co.uk/learningzone/clips Type 2187, click *SEARCH* and watch the clip
- 1 magnet and 1 or 2 paper clips per pupil; English labels on classroom equipment; items for testing, e.g. spoon, jug, scissors; (optional) a simple EFL dictionary

Warm up

- 1 Visit a website like the one listed above and watch a video clip about magnets. Talk about strong magnets.
- 2 Play Audio Track 44 or read:
Magnets can attract or pull things towards them. Some magnets are stronger than others.
Pause after each sentence for the pupils to listen and repeat.
- 3 Play Audio Track 45 or read:
Magnetism is a force; it pulls or pushes magnetic materials. A magnet attracts anything made of iron and steel. There is a magnetic field round a magnet.
Pause after each sentence for the pupils to listen and repeat.

Procedure

- 1 Give out the magnets and paper clips.
- 2 Ask the class for ideas about how to test the strength of a magnet with paper clips. Discuss the ideas.
- 3 Give out the Activity sheets and ask volunteers to read out the instructions for activity 1.
- 4 Tell the pupils to do the experiment for their own magnet.
- 5 After about 5 minutes, ask a pupil to explain what they have been doing.
- 6 Choose 2 pupils to record all the results on the board and to say whose magnet attracted a paper clip from the furthest distance.

Follow up

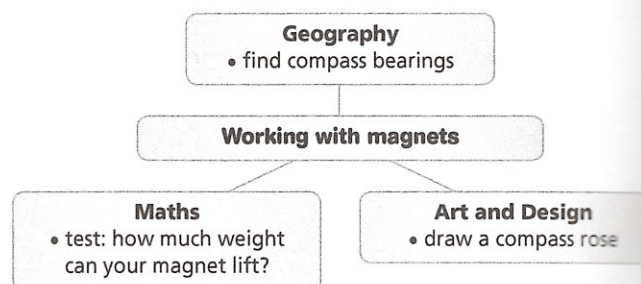
- 1 Play Audio Tack 46 or read the Fact box. Pause after each sentence for the pupils to listen and repeat. Explain *alloy, nickel* and *cobalt*.
- 2 Display the IWB and complete the tasks with the class.
- 3 Choose a pupil to read out the instructions for activity 1. Allow about 10 minutes for the pupils to carry out the experiment.
- 4 When the pupils have finished activity 2, ask them about their results and if all their predictions were correct.
- 5 Find out how magnets are used to separate metals for recycling.

Useful websites (see also Extra materials above)

- www.bbc.co.uk/learningzone/clips
Type 2349, 2186 or 2185, click *SEARCH* and watch the clip
- www.bbc.co.uk/schools/scienceclips/ages/7_8/magnets_springs.shtml
- www.engineeringinteract.org/resources/parkworldplot/flash/concepts/magneticforces.htm

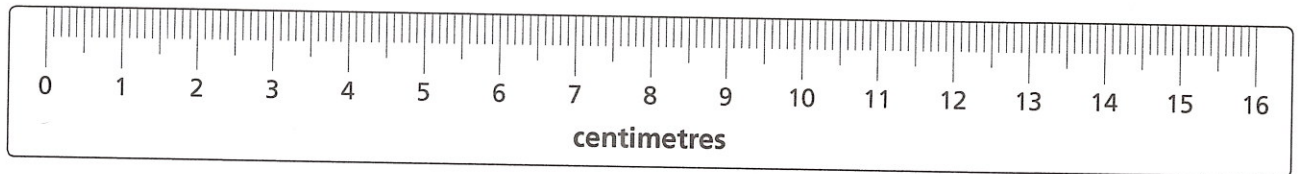
Search terms: magnets + activity

Cross curricular links



Working with magnets

1 How strong is this magnet?



- Place the end of your magnet at the 0 mark on the ruler above.
- Place a paperclip 10 centimetres away – does it move?
- If not, place the paperclip 9 centimetres away – does it move?.
- If it is not attracted to the magnet yet, move it 1 centimetre at a time nearer until it is pulled towards the magnet.
- In the box below, record the distance from which the paperclip is attracted to the magnet, in centimetres.
- Do the same experiment and record the result 3 times.
- Find out whose magnet is the strongest.

	Experiment 1	Experiment 2	Experiment 3
My magnet attracted a paperclip from ... cm			

I found out that the magnetic field of this magnet reaches about _____ cm.

2 Is it magnetic?

Choose 8 classroom objects and predict which ones are magnetic.
Test your predictions with a magnet.

Item name	My prediction yes/no	Test result yes/no
1		
2		
3		
4		
5		
6		
7		
8		

Reflections

Fact box

- Flat mirrors reverse the image.
- Convex mirrors give a wide image. They are used in cars.
- Concave mirrors turn the image upside down. They are used in telescopes.
- Bicycle reflectors reflect light not images.

Aim

- To investigate reflections in mirrors and shiny surfaces.

Language

- Prediction – future tense: *I will see*
- Recording – past tense: *I saw*
- Vocabulary: *concave, convex, face, flat, image, light, mirror, nothing, reflection, reverse, upside down*

Extra materials

- 1 copy of the Activity page per pupil, Audio Track 50, Audio text, IWB
- www.bbc.co.uk/learningzone/clips Type 3005, click *SEARCH* and watch the clip
- per group: 2 flat mirrors, a pencil, a large spoon, a bicycle reflector

Warm up

- 1 Display the Audio text and play Audio Track 50 twice. Ask the pupils to listen first and then join in.
- 2 Ask 2 confident pupils to role play the Person and the Image at the front while you replay the Audio.
- 3 Put the remaining pupils into pairs to role play the parts while they say the chant.
- 4 Hand out a few mirrors and shiny objects and ask about the *reflections* in them.

Procedure

- 1 Hand out the Activity sheets and read through the list of useful words at the bottom with the class.
- 2 Point to the first picture in Activity 1 and ask the pupils to predict what they will see in this mirror.
- 3 Repeat the question for each picture and introduce the new words as needed.
- 4 Put the pupils into pairs to discuss each picture in the same way and then write their predictions.
- 5 When they have completed activity 1, ask several pupils to share their answers with the class.
- 6 Put the pupils into small groups, give out the mirrors, etc. to set up exactly as in the pictures.
- 7 Ask all the pupils to look in the mirror/reflector for each picture and write and draw what they can see.
- 8 Choose some pupils to read their sentences aloud.

Follow up

- 1 Discuss the pupils' findings with the class. Ask if all the mirrors reflect in the same way and how the curved mirrors (or sides of the spoon) change the images.
- 2 Ask what can be seen in the reflector. Explain that it reflects back the light, not an image. Discuss how this can be useful when it is dark.

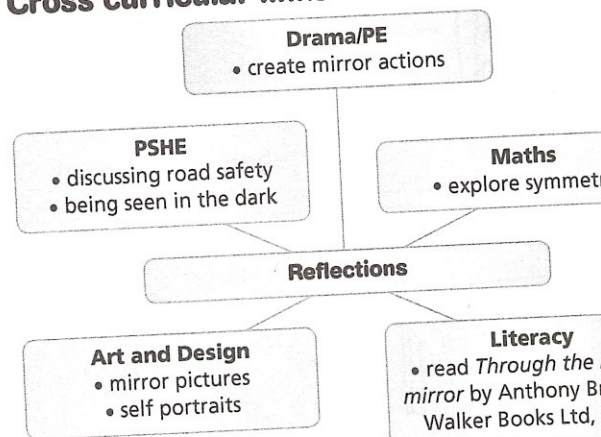
- 3 Display and complete the activity on the IWB.
- 4 Talk about road safety and, if possible, watch the clip on the website listed above.
- 5 Find more shiny objects and look at the images they reflect.
- 6 List where mirrors and reflectors are found and how they are used.

Useful websites (see also Extra materials above)

- www.bbc.co.uk/learningzone/clips Type 1625, click *SEARCH* and watch the clip
- www.bbc.co.uk/schools/scienceclips/ages/5_6/light_dark.shtml
- www.sparklebox.co.uk/topic/world-around-us/light-dark/#.T576SLP2Ysd
- www.engineeringinteract.org/resources/alienattack/fconcepts/reflectionmirrors.htm

Search terms: reflection, refraction, mirrors

Cross curricular links

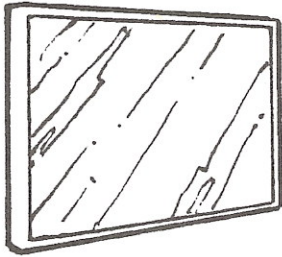


Reflections

1 What will I see in the mirror?

2 What I saw in the mirror

1



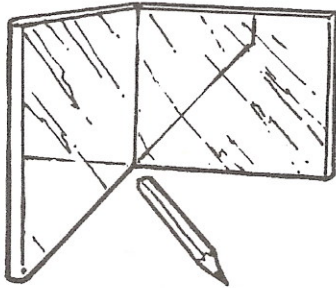
flat mirror

I predict _____

1

I saw _____

2



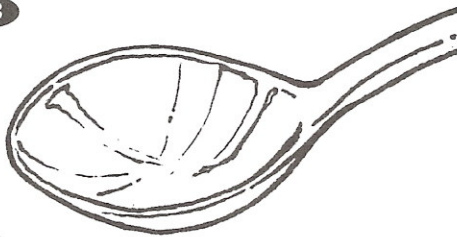
2 flat mirrors
at 90°

I predict I will see _____ pencil

2

I saw _____

3

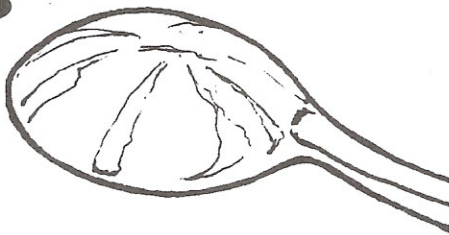


concave
mirror

I predict _____

3

4

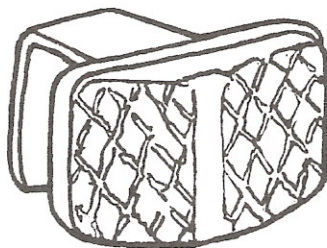


convex
mirror

I predict _____

4

5



reflector

I predict _____

5

Useful words: face, image, reversed, bigger, smaller, upside down, nothing, reflection

Lesson
3b

Sound: pitch

Fact box

- The speed of sound in air is 343 metres per second.
- *Volume* is measured in decibels.
- The *pitch* of a sound is how high or low it is.
- The *shorter* the string or pipe, the *higher* the pitch.
- The *longer* the string or pipe, the *lower* the pitch.

Aim

- To investigate how pitch is related to size in a musical instrument.

Language

- Writing instructions
- Comparatives & superlatives: *higher, highest lower, lowest, longer, longest, shortest*
- Vocabulary: *fair test, instrument, musical, note, pipe, pitch, pluck, sound, stretch, string*

Extra materials

- 1 copy of the Activity page per pupil, Audio Track 52 from Lesson 8.2b, Audio Track 56, IWB
- paper/exercise books, collection of boxes/cartons, elastic bands, sticky tape, scissors, optional: colour pictures of the musical instruments on the Activity sheet
- www.bbc.co.uk/schools/scienceclips/ages/9_10/changing_sounds.shtml

Warm up

- 1 Play and join in Audio Track 52 from Lesson 8.2b. Revise the concepts of vibrations and volume.
- 2 Play the first 2 pitches of Audio Track 56. Ask how they are different. (One is a high sound; the other is low.) Explain *pitch*. Play the remaining sounds and ask the pupils to put up a hand when the pitch is low.
- 3 Explain that some musical instruments make higher pitched sounds than others.
- 4 If you have pictures, display and name them with the class, or give out the Activity sheets and tell the class to look at the pictures in activity 3. Ask what kind of sound each instrument produces – high or low pitch.

Procedure

- 1 Give out the boxes/cartons, sticky tape and elastic bands.
- 2 Put the pupils in pairs and explain that they are going to make a simple musical instrument to see what sound it makes. Ask 5 pupils to read aloud the instructions for activity 1.
- 3 Allow 5 minutes for the pupils to make the instrument and then put the pairs into groups of 4 or 6 to find out which instrument has the lowest/highest pitch.
- 4 Ask the groups which instruments make the lowest pitched sounds and if they have the longest or the shortest strings (longest). Discuss if it is always true that the shortest strings have the lowest pitch (no).
- 5 Read activity 2 with the class. Tell the pupils to work in their pairs to write instructions (on the back of the Activity sheet) for the fair test. (Revise fair tests from Lesson 5.2b if needed.)
- 6 When the instructions are written they can be given to another pair to follow and record the results.

- 7 Introduce the word *note* – a musical sound. Discuss whether shorter or longer pipes have a higher or lower pitch before reading through and asking the pupils to answer the questions in activity 3.

Follow up

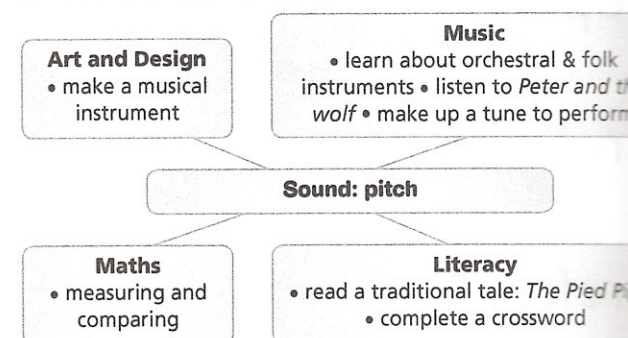
- 1 Display the IWB for pupils to do the word search.
- 2 Challenge pupils to improve the sound of their instruments by cutting holes under the strings or by using a ruler as a bridge.
- 3 Visit the website listed above and do the activities.

Useful websites (see also Extra materials above)

- www.crick.northants.sch.uk/Flash%20Studio/cfsscience/sound1f/sound1f.html
Hover over *Key Stage 1*, click *Science*, scroll down to *Sound*, click the picture
- www.bbc.co.uk/learningzone/clips/
Type *1603, 2420, 2418* or *1608*, click *SEARCH* and watch and listen to the clip

Search terms: sound + pitch, sounds activity, pied piper story

Cross curricular links



Sound: pitch

1 Instructions to make a simple stringed instrument

Equipment

1 box/carton sticky tape elastic band

Method

- 1 Tape the box closed if necessary.
- 2 Stretch an elastic band over the box.
- 3 Hold the box with one hand.
- 4 Pluck the string (elastic band) with other hand.
- 5 To shorten the string, hold it down with one finger while plucking.

2 Write instructions

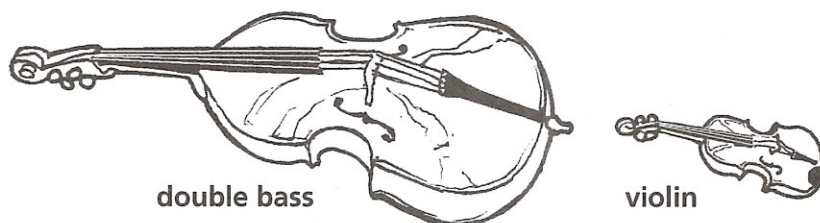
On the back of this sheet, write instructions for a fair test to see if long or short strings make high pitched sounds. (Remember: in a fair test, only one thing is changed and tested at a time.)

Draw a table for the results.

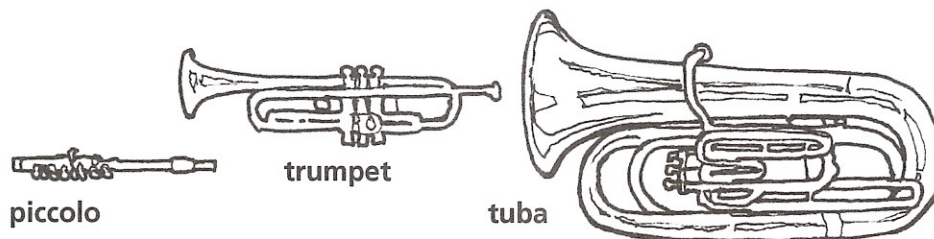
3 Answer these questions

1 Do long or short strings make the lowest notes? _____

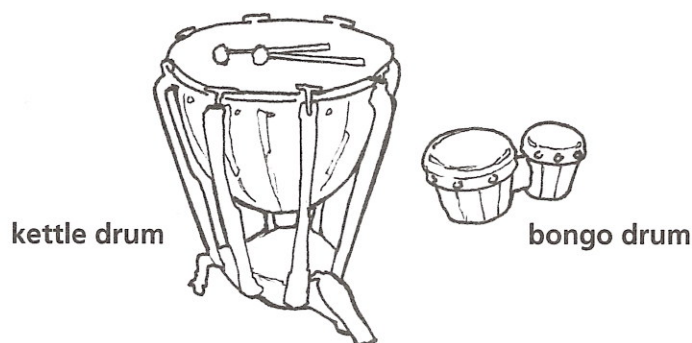
2 Which instrument makes the high pitched notes? _____



3 Which instrument makes the lowest notes? _____



4 Which drum makes the lower notes? _____



Lesson
3a

Carbon footprint

Fact box

- Carbon dioxide = CO₂.
- Carbon footprint = carbon dioxide emissions measured in kg.
- Growing, manufacturing, transporting and storing products leave footprints.
- Leaving one computer on 24 hours a day = 600kg CO₂ emissions a year.
- Humans breathe out CO₂.
- Plants take in CO₂ and change it to oxygen and carbon
- Methane (CH₄) is also a greenhouse gas. Cows burp methane!

Aim

- To identify ways in which individuals can make lifestyle changes which will reduce their impact on the Earth's resources.

Language

- Vocabulary: air, carbon, carbon dioxide, CO₂, electricity, emission, environment, footprint, fossil fuel, gas, greenhouse, heating, methane, transport

Extra materials

- 1 copy of the Activity page per pupil, Audio Track 64, IWB
- a ruler, a footprint on a piece of paper, labelled

Warm up

- 1 Show the footprint. Say *This is a footprint*. Pupils repeat.
- 2 Say, and demonstrate: *I can measure the footprint with a ruler*.
- 3 Ask if the pupils have heard of a carbon footprint.
- 4 Give out the Activity sheets and look at the pictures at the top. Explain that each time we use electricity or burn fossil fuels like coal and oil, and every time we travel in a car, bus or plane, a gas called carbon dioxide is given off and our carbon footprint grows bigger.

Procedure

- 1 Explain that a carbon footprint cannot be measured with a ruler, but we can work out how many kilograms of carbon dioxide we put into the air.
- 2 Write *carbon dioxide* and CO₂ on the board. Explain that the amount of CO₂ in the air is increasing which is not good for Earth. We need to think about things we do that increase our carbon footprints and then make choices about things we can do to make less CO₂ and so make smaller carbon footprints.
- 3 Play Audio Track 64 or read the choices on the Activity sheet. Pause after each choice to repeat and discuss.
- 4 Tell the pupils to choose and write 5 (or more) ways to make their own carbon footprints smaller.

Follow up

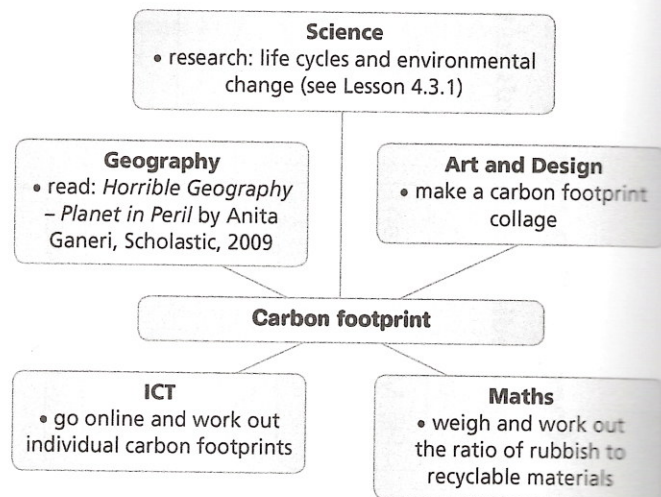
- 1 Ask individual pupils to read out the choices they have made.
- 2 Ask for more ideas to add to the footprint chart.
- 3 Display the IWB for pupils to complete the activity.
- 4 Cut out the pupils' footprints and use them to make a classroom display.

Useful websites

- www.scholastic.co.uk/eco-island
Go to and click the activity of your choice
- www.globalfootprints.org/teachers
Scroll down and click *Our Kids Quiz*
- www.sciencemuseum.org.uk
Click *Online stuff* then *Games* then *Energy ninjas* or *Hungry mice*
- www.climatechoices.co.uk
Click *resources* or *activities*
- www.naturegrid.org.uk/eco-exp
Click on *Eco-centre*

Search terms: eco school, carbon footprint, renewable energy

Cross curricular links



Lesson
3b

Helping the Earth

Fact box

- An estimated 50% of the world's rain forests have been cut down since 1950.
- Fair Trade offers farmers a fair price for their products.
- Charities such as The Red Cross provide emergency aid when there is a disaster.

Aims

- To understand that everyone is part of a global community.
- To discuss how individual actions can affect the Earth.

Language

- Imperatives: verbs
- Vocabulary: *bicycle, charity, communicate, community, computer, Earth, electricity, email, factory, global, recycle, resources, rubbish, traffic, waste, wa*

Extra materials

- 1 copy of the Activity page per pupil (enlarged if possible), Audio Track 65, IV
- scissors, dice and counters for the board game

Warm up

- 1 Write the class name at the top of the board. Ask different pupils each to write on a new line, the name of the school, street, town, district, country, continent, Earth, and the Universe as if addressing an envelope.
- 2 Explain that we are part of the *global community* living on the Earth and we all use the Earth's resources.
- 3 Ask the pupils to name any of Earth's resources (water, oil, gas, electricity, trees, etc). List the answers on the board.
- 4 Ask when water is used (drinking, washing, cooking, making things in factories) and when oil is used (to run cars, buses, aeroplanes, in factories). Discuss what can be done so that these resources are not wasted.

Procedure

- 1 Put the pupils in pairs. Give out the Activity sheets and scissors. Explain that there are 2 games.
- 2 For game 1, Bingo, pairs cut out all the cards on one sheet. The other sheet is the game board. Pairs turn the cards face down (except the 2 blank cards) and mix them up, then take 11 cards each and look at the words and pictures. Play Audio Track 65 or read out the words in the boxes at random. The player with the same words puts that card on top of the matching words on the board. The first person to put down all their cards shouts *Bingo!*
- 3 Challenge each pupil to think of one thing to do at home to help the Earth (e.g. feed the birds, make compost). Tell the pairs to write their ideas on the 2 blank squares on the board (2, 24) and on the 2 blank cards and discuss how many points the actions are worth. Play the game again.
- 4 For game 2, Match and score, pairs turn all 24 cards face down and mix them up. They take turns to pick up a card, read the words aloud, match the picture to the one on the board and write down the score.

Follow up

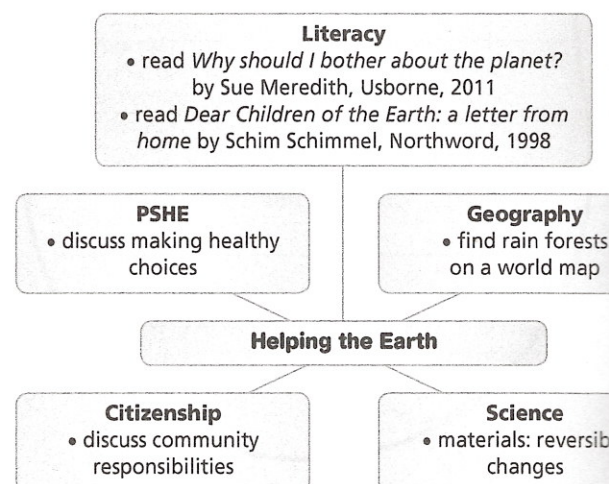
- 1 Choose pupils to read out some cards. Ask the rest to raise a hand when they hear a verb. List the answers.
- 2 Talk about the actions. Discuss which are 'odd ones' and how not smoking or not taking drugs can help the community. Ask how communicating by letters or text helps the community.
- 3 Write persuasive newspaper articles about these issues.
- 4 Display the IWB for pupils to complete the activity. Explain that pupils will get a higher score if they highlight each answer correctly first time.

Useful websites

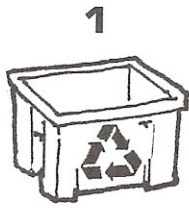
- www.globalfootprints.org/teachers
Scroll down to and click *Our Kids Quiz*
- www.bbc.co.uk/schools/ks2bitesize/english/writing
Go to *Argument*, click *Play* or *Read*
- www.sciencemuseum.org.uk
Click *Online stuff* then *Games*. Go to and click *Building a bonanza*

Search terms: global community, global schools, eco-friendly

Cross curricular links



Helping the Earth



Recycle
+ 2 points

2



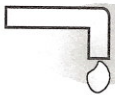
One computer
switched on 24/7 emits
600 kg CO₂ in a year.
Switch off.
+ 3 points

4



+ 5 bonus points

5



A dripping tap can
waste 90 litres of water
a day! Turn it off.
+ 5 points

6



Say **No** to smoking.
+ 10 points

7



Don't waste paper.
+ 3 points

8



Support a charity.
+ 4 points

9



Never leave litter!
+ 3 points

10



Buy a bar of
Fair Trade chocolate.
+ 3 points

11



Use energy-saving
light bulbs.
+ 2 points

12



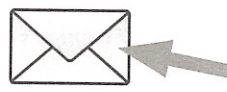
Ride a bicycle.
+ 3 points

13



50% of rainforests
have been cut down
since 1950. Plant a tree.
+ 5 points

14



Communicate!
Send a card to a
friend far away.
+ 1 point

15



Sit in a traffic jam.
0 points

16



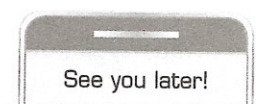
Throw away
less rubbish.
+ 3 points

17



Say **No** to drugs!
+ 10 bonus points!

18



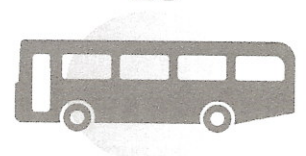
Communicate!
Send a text.
+ 1 point

19



Walk.
+ 3 points

20



Go by bus.
+ 2 points

21



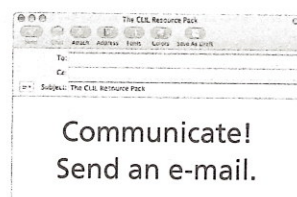
A TV on standby
uses 50% electricity.
Switch off.
+ 3 points

22



Go on line. Find a
useful website.
+ 1 point

23



Communicate!
Send an e-mail.
+ 1 point

24

Lesson
1a

The water cycle

Fact box

Water on the Earth is always moving. It moves in a circle called *the water cycle*.

- First, the sun *heats* the water in rivers and lakes and in the sea. The water *evaporates* into the air.
- Next, the water *vapour cools* and *condenses* into *clouds*.
- Then, clouds move up over the land and water *falls* as rain.
- Finally, the rain water *collects* in lakes and rivers which take it back to the sea. The cycle starts again.

Aims

- To be able to identify and sequence the key components of the water cycle.

Language

- Time markers: *First, next, then, finally*
- Nouns: *cloud, vapour, water cycle*
- Verbs: *condenses, cools, evaporates, falls, heats, returns*

Extra materials

- 1 copy of the Activity page per pupil, Audio Track 66, 1 copy of the Audio text per pair of pupils, IWB
- scissors

Warm up

- 1 Ask *Where does water come from? Where does the water go when it rains?*
- 2 Display the Audio text. Play Audio Track 66 and ask the class to listen and follow the words.
- 3 Read the words with the class. Play the Audio again. Ask the pupils to clap the rhythm as they say the words.
- 4 Tell the pupils to stand up and do actions as they say the poem. Line 1: draw circles in the air; line 2: wave hands and fingers upwards; lines 3 & 4: jump up into the air; lines 5 & 6: wave arms like clouds; lines 7 & 8: shout *Hurray!*; line 9: wave hands and fingers downwards, shiver and look cold; line 10: move hands to show the water swelling; line 11: make sea wave movements with hands; line 12: do water ski movements.
- 5 Put the pupils into pairs and give out the poem words and scissors. Tell each pair to cut the poem into 6 pairs of lines and then mix the lines up. Give them 2 or 3 minutes to put the lines back in the correct order.

Procedure

- 1 Give out the Activity sheets and look at activity 1.
- 2 Remind the pupils of the chant and, using the diagram and Fact box information, explain the water cycle.
- 3 Write the key words and any others they may not understand on the board and explain them.
- 4 Read the 4 stages in activity 2. Explain that they are not in order. Ask *What happens to the water first/next/then/finally?* Tell pupils to number the stages, 1 to 4, cut them out and stick them on the diagram in activity 1.
- 5 Put the pupils into pairs. Ask them to cut out the pictures in activity 2, mix them up and spread them, face down, on the table for the water cycle game. Pupils take turns to pick up a card and make a set of the 4 stages in

the right order. If they turn over a picture out of order they put it back and wait until the next go.

- 6 Tell them to say what is happening on the card when they turn it over, e.g. *The water is evaporating and to remember which stage of the cycle comes next. They can look at the diagram to remind them.*

Follow up

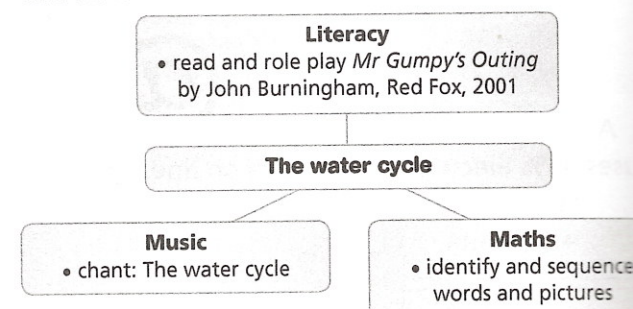
- 1 Display the IWB for the pupils to complete the activity.
- 2 Read *Mr Gumpy's Outing* by John Burningham with the class. Talk about different ways of asking for permission. If there is time, use the story for a role play exercise. Discuss the dangers of being unable to swim. Explain that the story has a happy ending. Ask if they know any other stories with a happy ending.

Useful websites

- topicbox.net/Geography/Water%20Cycle
Click *Water Cycle* (row 3) and choose an activity
- www.bbc.co.uk/schools/riversandcoasts/water_cycle
Click *Rivers* or *Coasts*
- www.globaleye.org.uk/primary_summer2002/focuson/index.html

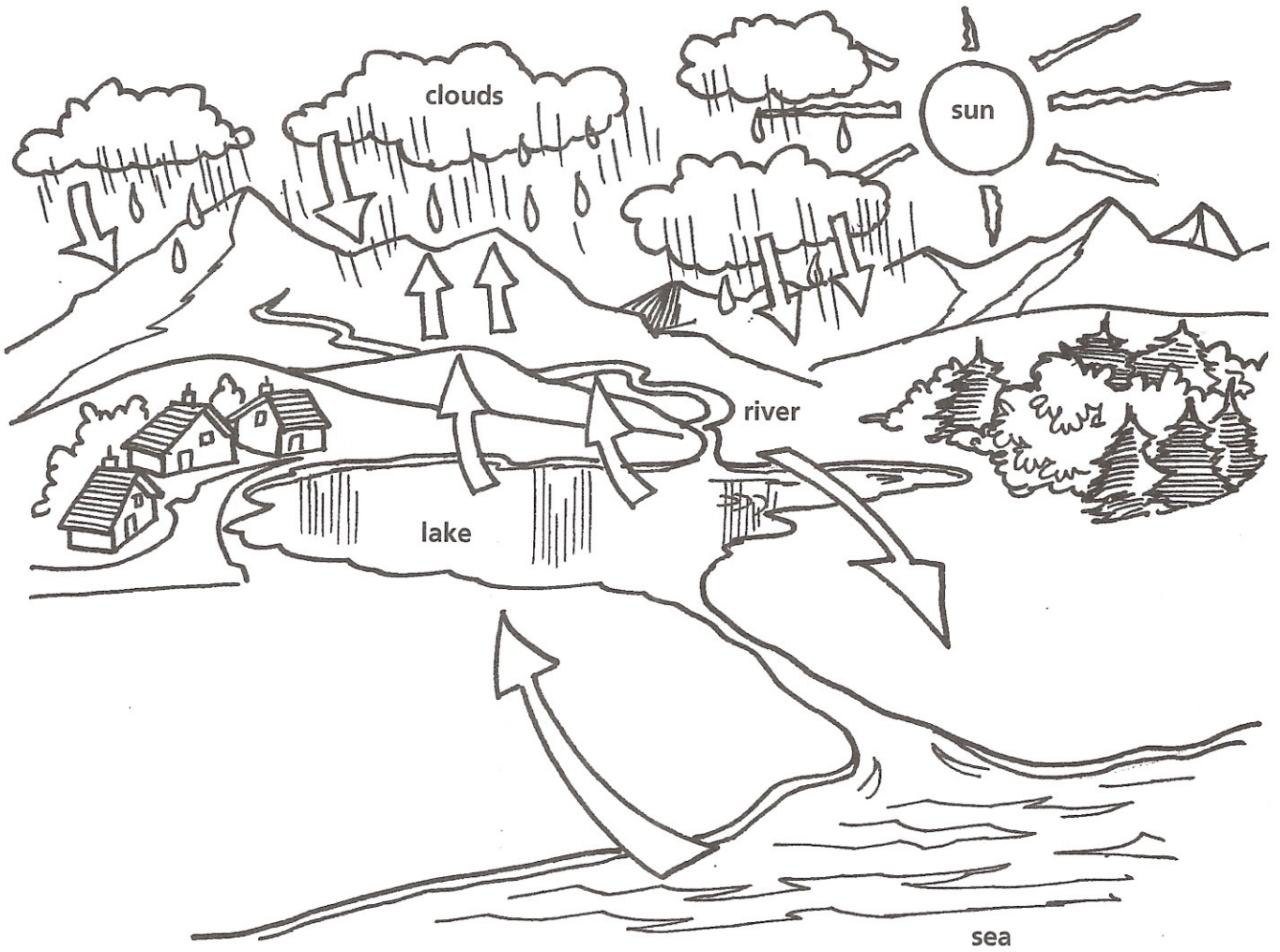
Search term: the water cycle

Cross curricular links



The water cycle

1 Label the water cycle



2 Number, cut out and play

<p>clouds</p>	<p>river</p> <p>lake</p> <p>sea</p>	<p>lake</p>	<p>clouds</p>
<p>water vapour condenses into clouds</p>	<p>water returns to the sea</p>	<p>water evaporates into the air</p>	<p>water falls as rain</p>