W.S.1. Life processes.

Name .....

All plants and animals carry out seven processes in order to stay alive. The table below shows these seven LIFE PROCESSES.

Movement	This is easier to see in animals than in plants. Plants move very slowly as they grow.
Respiration	Getting energy by reacting food with oxygen.
Sensitivity	Sensing changes around them and then responding.
Growth	Food is used to build up the parts of the body.
Reproduction	Producing offspring (young).
Excretion	Getting rid of poisonous waste chemicals from the body.
Nutrition	Plants make their own food by PHOTOSYNTHESIS. Animals must feed on plants or other animals.

Use the name MRS GREN as an easy way to remember all 7 life processes.

Exercise 1 - Complete the sentences below.

1) It is usually easier to see movement in A _ _ _ _ _ _

2) We respire in order to produce E _ _ _ _ _ for the body.

3) Our ears, eyes and nose give us S _ _ _ _ _ _ _ _ _ _

4) If living organisms did not R _ _ _ _ _ _ _ _ they would soon become extinct (die out).

5) The kidneys E _ _ _ _ _ _ a waste chemical called urea.

Exercise 2 - A motor car moves but it is not living. Complete the two lists below to show which processes it does and does not show.

Processes a car does show	Processes a car does not show
movement	growth
nutrition (takes in petrol)	.....
.....	.....
.....	

W.S.5. A balanced diet.

Name .....

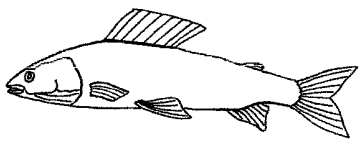
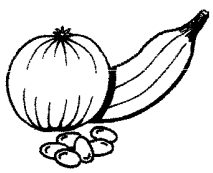
Exercise 1 - Fill in the missing words in the passage below.

In order to stay ..... the body needs seven main chemicals which are called food ..... These are carbohydrates, proteins, ..., minerals, vitamins, fibre and water. A balanced diet contains the ..... amounts of all seven food types. Carbohydrates are sugars and ..... Carbohydrates give us energy quickly. Fats also give us ..... but they release it much more slowly. Stored fat under the skin also helps us to keep ..... We need ..... to help us grow and to repair damaged parts. Minerals and ..... are needed in smaller amounts to keep the body healthy. Fibre helps to keep the food moving along the .....

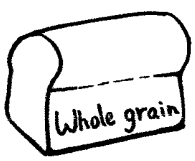
intestines types fats warm correct protein starch healthy energy vitamins

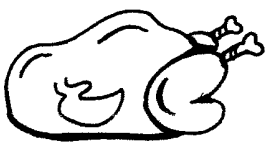
Food type	Foods rich in this
Carbohydrate	Starchy and sugary foods, e.g. potato, bread, cereals and cakes.
Protein	Meat, fish, eggs, cheese, milk and nuts.
Fat	Vegetable oils, butter, lard, cream, cheese and some meats.
Vitamins	Fresh fruit and vegetables.
Minerals	A wide range of foods, e.g. iron from meat and calcium from milk.
Fibre	Cereals, fruit and vegetables.

Exercise 2 - Write down the main FOOD TYPES that each of the foods below contain.


_____ _____ _____ _____






_____ _____ _____ _____

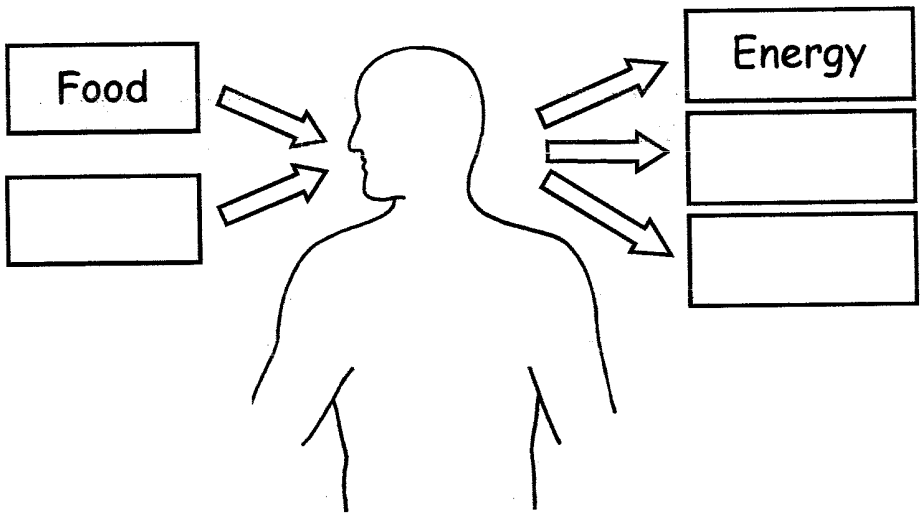
W.S.19. **Respiration.** Name .....

We need energy for movement, warmth and to keep all of the body parts working. We get our energy by reacting glucose and oxygen together in our cells. This chemical reaction is called RESPIRATION and it can be shown with a word equation.

FOOD + OXYGEN ⟹ ENERGY + WATER + CARBON DIOXIDE

Respiration is similar to burning food but it releases the energy much more slowly inside our cells.

Exercise 1 - Complete the missing labels on the diagram below.



Exercise 2 - Complete the sentences below.

1) Respiration produces useful _ _ _ _ _ _ in the cells.

2) We need energy to _ _ _ _ and to keep warm.

3) The main food substance that is used in respiration is _ _ _ _ _ _ _

4) _ _ _ _ _ _ _ _ is a similar process to respiration but it happens much more quickly.

5) The waste gas produced by respiration is C _ _ _ _ _ D _ _ _ _ _ _

6) We get rid of carbon dioxide by _ _ _ _ _ _ _ _ _ _ it out.

7) If plants did not make _ _ _ _ _ _ gas we would soon use it all up.

W.S.20. Drugs and health.

Name .....

Drugs affect the way the body works. Some drugs are used by doctors to treat sick people. These can be very useful but they must be taken in the correct amounts. It is illegal (against the law) to take certain drugs because they are so dangerous to health. Even legal drugs such as alcohol can be very harmful if too much is taken. Some drugs are ADDICTIVE. This means that a person can become dependent on them and if they do not have the drug they may develop WITHDRAWAL SYMPTOMS such as shaking and sickness. The table below gives information about the effects of various drugs on health.

Type of drug	How it affects the body
Alcohol	Alcohol slows down the speed at which the brain and nervous system works. A little alcohol makes people feel happy and relaxed. More alcohol makes a person feel dizzy and affects their judgement. Large amounts may make a person unconscious and they may even die. An alcoholic is a person who is addicted to alcohol. Heavy drinking over several years causes damage to the brain, liver, and heart.
Tobacco	Tobacco smoke is very poisonous. A person can become addicted to smoking because of a chemical called nicotine in the smoke. Smoking causes cancers, heart disease, bronchitis, and damaged lungs. Smoking also makes a person short of breath and more tense.
Cannabis	Cannabis or 'pot' causes hallucinations. This is when a person thinks that they are seeing or hearing something that does not exist. They can then become confused and do dangerous things and may have a fatal accident.
Solvents	Some people like to breathe in the fumes from substances such as glue and paint (glue sniffing). This makes them feel dizzy and they may have hallucinations. The fumes get into the blood and damage the heart. Many people have died as a result of breathing in solvents.

Exercise - Fill in the missing words in the passage below.

An ..... is a person who has become dependent on a certain drug. It is very dangerous to drink alcohol and then drive because the ..... are slowed down. An ..... is a person who is addicted to alcohol. They may damage their brain, ... and heart. People who smoke are usually more tense and ..... as a result of the nicotine in their blood. The risk of developing ..... cancer is much greater in smokers. Drugs such as cannabis make a person ..... This can make them behave ..... The fumes from ..... may damage the heart and even cause death.

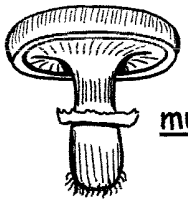
hallucinate addict reactions liver lung nervous dangerously solvents alcoholic

W.S.25. **Classification.** Name .....

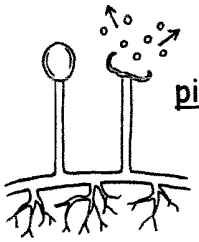
All of the millions of species (types) of living things can be sorted into groups. This is called CLASSIFICATION. They are sorted into groups that have features in common.

Plants without flowers.

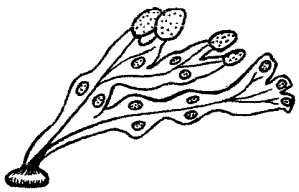
FUNGI
They do not contain the green chemical chlorophyll and so do not make their own food. Most feed on dead material and reproduce with tiny spores.


mushroom

spores being released

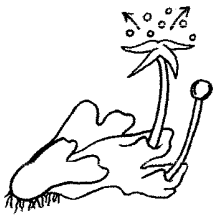

pin mould

ALGAE
They live in water and have no roots or leaves. They make their own food and can be green, brown or red.

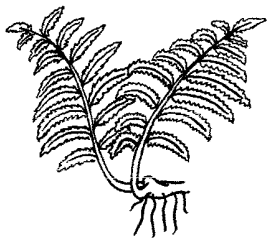

seaweed

MOSSES AND LIVERWORTS
They have small, simple roots and leaves. They can only grow in damp places. They reproduce with spores.


moss

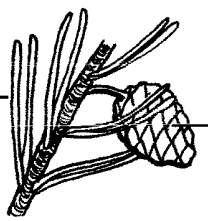

liverwort

FERNS AND HORSETAILS
They have well developed roots and stems. They usually grow in damp, shady places. They reproduce with spores.


fern


horsetail

CONIFERS
They are trees with tough, needle-shaped leaves. They do not have flowers and reproduce with cones.



Exercise - Fill in the missing words in the passage below.

Classification means sorting living things into ..... Living things can be sorted into groups that have ..... in common. Fungi are unusual plants because they do not contain green ..... Algae have no ..... or leaves. Fungi, mosses and ferns produce tiny ..... for reproduction and conifers produce .....

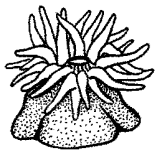
spores **groups** **features** **chlorophyll** **roots** **cones**

W.S.27. Animals without backbones (1). Name .....

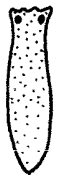
All animals can be sorted into two main groups. VERTEBRATES have a backbone and INVERTEBRATES do not. Read the information below about the groups of invertebrates with soft bodies.

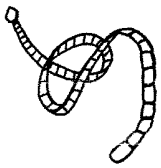
JELLYFISH AND ANEMONES
They live in the sea. They have a very simple body with tentacles. Some have sting cells.


jellyfish

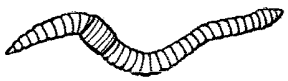

sea anemone

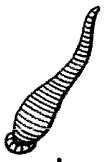
FLATWORMS
They have a long, flat body. Some live in freshwater. Some are parasites that live inside other animals.


flatworm

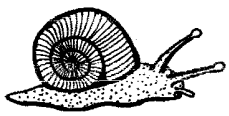

tapeworm

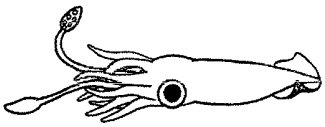
SEGMENTED WORMS
They have a long body divided by rings into segments. Most of them live in water or soil.


earthworm

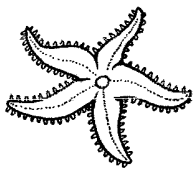

leech

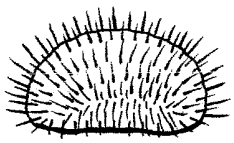
MOLLUSCS
They often have a shell for protection. Most of them live in water. Some have tentacles.


snail


squid

STARFISH AND SEA URCHINS
They all live in the sea. They have a thick skin which is sometimes covered in spines.


starfish


sea urchin

Exercise - Complete the sentences below.

1) Animals with a backbone are called _____

2) Animals without a backbone are called _____

3) Jellyfish and sea anemones both have _____

4) A _____ is a flatworm that lives inside other animals.

5) An earthworm's body is divided into _____

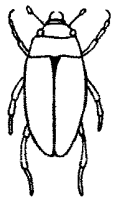
6) A _____ is a mollusc that has a shell for protection.

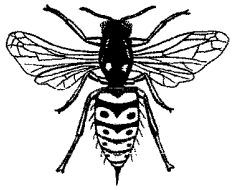
7) Sea urchins are covered in _____

W.S.28. Animals without backbones (2). Name .....

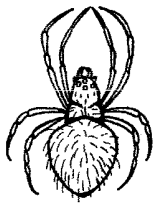
ARTHROPODS are invertebrates with a hard outer coating. They all have a segmented body with jointed legs. This is a very large group and it can be divided into the smaller groups shown below.

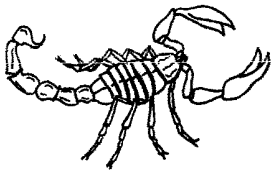
INSECTS
They have three parts to the body and six legs. The adults usually have four wings and a pair of antennae.


beetle

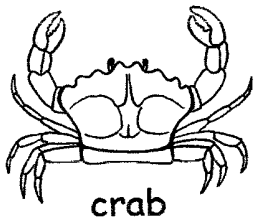

wasp

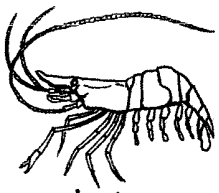
SPIDERS AND SCORPIONS
They have two parts to the body and eight legs. Spiders usually spin a web of silk and have poisonous fangs. Scorpions have a sting at the end of their tails.


spider


scorpion

CRUSTACEANS
Most of them live in water. They usually have a thick, hard coating. They have many legs and two pairs of antennae.


crab


shrimp

CENTIPEDES AND MILLIPEDES
They have long bodies made up of many segments. Centipedes have one pair of legs on each segment and millipedes have two.


centipede


millipede

Exercise - Complete the sentences below.

1) _ _ _ _ _ _ _ _ _ _ _ all have a hard outer coating.

2) A fly is an _ _ _ _ _ _ _

3) Insects usually have _ _ _ legs and _ _ _ _ wings.

4) Spiders have _ _ _ _ _ legs.

5) Scorpions have a _ _ _ _ _ _ at the end of their tails.

6) Crabs and _ _ _ _ _ _ _ _ are closely related.

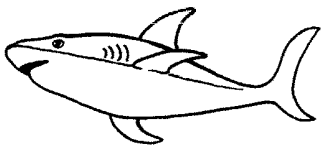
7) The bodies of centipedes are made up of many _ _ _ _ _ _ _ _ _

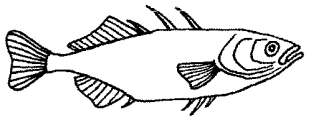
W.S.29. Animals with backbones.

Name .....

VERTEBRATES have a backbone and an inside skeleton. Read the information below about the groups of vertebrates.

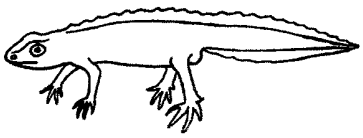
FISH
They live in water and have gills for breathing. They are covered with scales and have fins for swimming.


shark

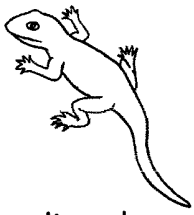

stickleback

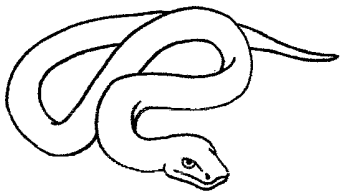
AMPHIBIANS
The tadpole (young) lives in water and has gills for breathing. The adult lives on land and has lungs. They have a damp skin without scales.


frog

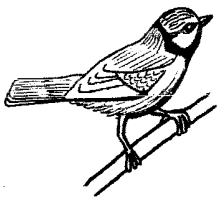

newt

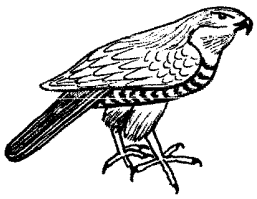
REPTILES
They have a dry, scaly, waterproof skin. Their eggs have a tough leathery shell and are laid on land.


lizard

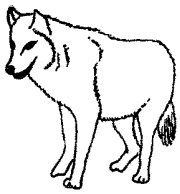

snake

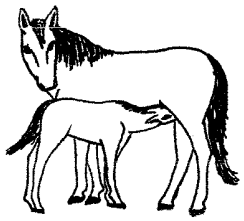
BIRDS
They are covered with feathers and have wings for flying. Their eggs have a hard shell. They have a beak for feeding. Their bodies are warm because they make heat inside.


blue tit


sparrowhawk

MAMMALS
They have hair and a warm body. The young develop inside the mother's body. After they are born the young feed on milk from the mother's body. Humans belong to this group.


wolf


horse

Exercise - Fill in the missing words in the passage below.

Fish live in water and have ..... for breathing. Both fish and ..... have a scaly skin. The young of ..... live in water but the adults live on land. Amphibians have a ..... skin. Both reptiles and ..... lay eggs on land. Birds are covered with ..... and have ..... for flying. Birds and ..... have a warm body. Mammals have ..... and feed their young on .....

amphibians gills reptiles birds hair milk wings damp feathers mammals

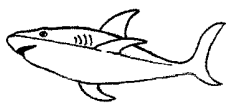
W.S.32. **A place to live.** Name .....

The place where a plant or animal lives is called its HABITAT. All species have special features called ADAPTATIONS which help them to survive in their habitats. For example a polar bear has a thick coat of fur to protect it from the cold and a camel can store large amounts of water in its stomach. The table below shows some of the ENVIRONMENTAL CONDITIONS that are important for survival.

Environmental condition	Why it is important for survival
Temperature	This affects the chemical reactions inside the cells of living organisms. When it is cold organisms slow down.
Light	Plants need light to make food by photosynthesis. Animals need the food that plants make.
Water	Water is needed to dissolve chemicals for transport and so that chemical reactions can take place.
Oxygen	This is needed so that energy can be released inside the cells by respiration. There is plenty of oxygen in the air but it may be in short supply in water, soil or mud.

Exercise 1 - Join up the organisms below to their correct habitats.

shark



buttercup

newt

monkey

fox

meadow ocean woodland pond jungle

Exercise 2 - Complete the sentences below.

1) A _____ is the place where an organism lives.

2) An _____ is a special feature that helps an organism to survive.

3) An adaptation of a cactus is a thick _____ outer covering.

4) An organism's surroundings are called its _____

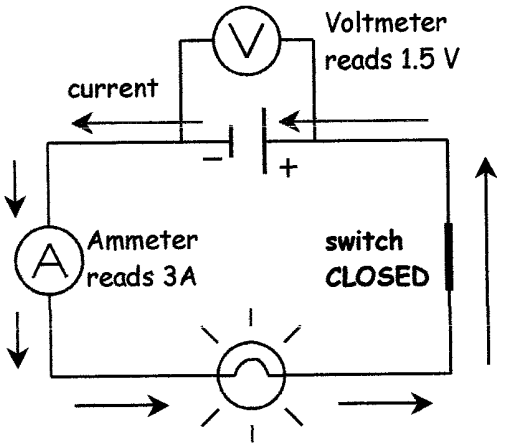
5) _____ is needed for chemical reactions to take place inside cells.

environment **adaptation** **water** **habitat** **waterproof**

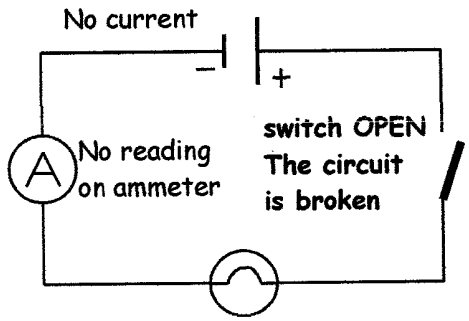
W.S.64. Electric current and voltage.

Name .....

Metals are good CONDUCTORS (carriers) of electricity. Most non-metals do not conduct electricity and we call them INSULATORS. An electric current will only flow through a COMPLETE circuit. A chemical reaction inside the battery pushes the current from the negative terminal to the positive terminal.



The bulb uses the electrical energy and lights up.



The bulb does not light up

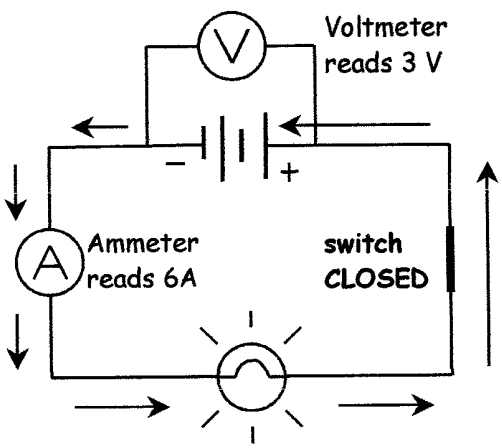
Symbols

- A cell (battery).
- A switch. This connects two leads.
- A voltmeter. This measures the voltage across the battery terminals.
- An ammeter. This measures the size of the electric current in AMPS (A).
- A bulb. The brightness gives some idea of how much electricity is flowing.

The effect of increasing the voltage.

The diagram opposite shows what happens if two batteries are put into the circuit. Carefully compare it to the first diagram at the top of this page and then try to complete the missing words in the passage below.

A battery pushes out the C _ _ _ _ _ _ The voltage across both batteries can be measured using a V _ _ _ _ _ _ _ _ With two batteries there is T _ _ _ _ as much voltage. This produces twice the current and so the bulb is much B _ _ _ _ _ _ _ The negative end of one battery must be connected to the P _ _ _ _ _ _ _ end of the other battery. If they are connected the wrong way round the current will not F _ _ _



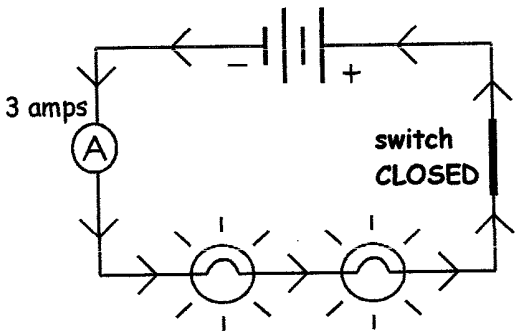
The bulb is much brighter.

W.S.65. Series and parallel circuits. Name .....

Exercise 1

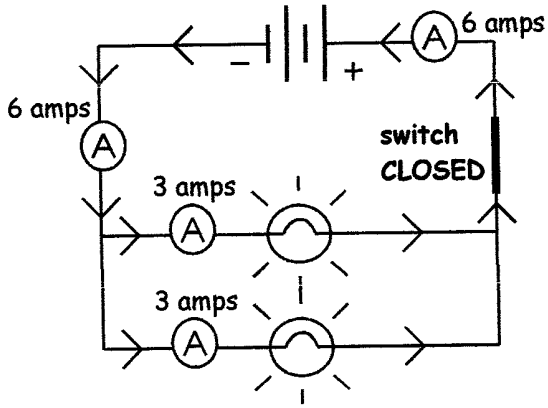
The diagrams below show the two ways of adding two bulbs to a circuit. Study them carefully and then try to fill in the missing words in the passages underneath. Choose from the list of words at the bottom.

Bulbs in series



The bulbs are dim.

Bulbs in parallel



The bulbs are much brighter.

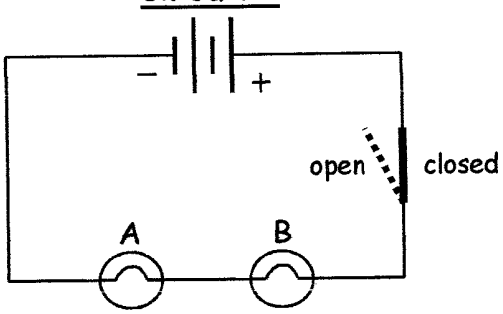
The current is ..... because it is harder for it to travel through both bulbs. We say that there is a high ..... The current does not get used up as it travels around the circuit. The ..... gives the same reading anywhere in the circuit.

Both bulbs are connected directly across the two batteries therefore they are given the full ..... The current is ..... because it is easier for it to flow around the circuit. If another bulb was connected in parallel they would still be as .....

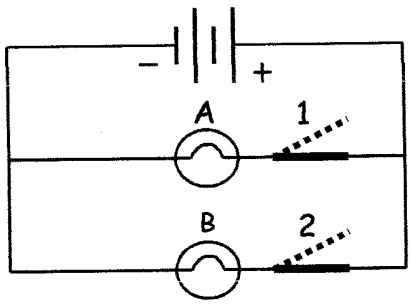
voltage **small** **bright** **resistance** **larger** **ammeter**

Exercise 2 - Study the two circuit diagrams below and then try to complete the sentences.

circuit 1



circuit 2



1) If the switch is opened in circuit 1 both bulbs would _____

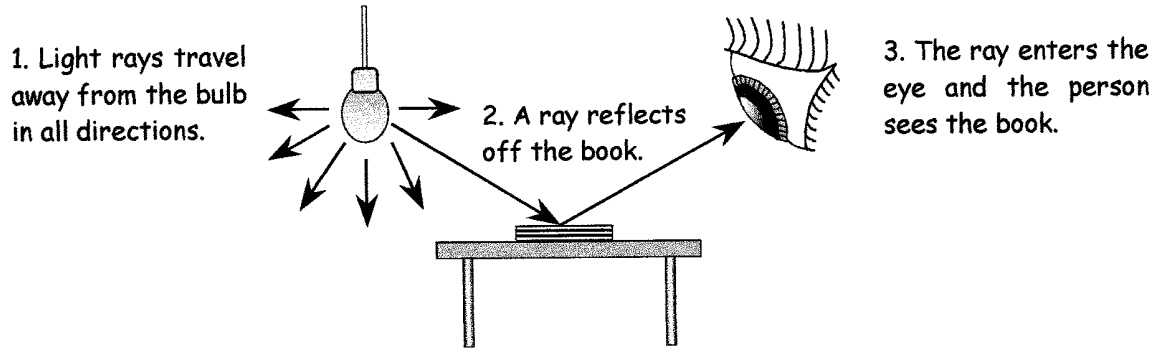
2) If bulb A is removed from circuit 1 bulb B would get _____

3) If switch 1 is opened in circuit 2 only bulb _____ would light up.

W.S.75. Reflection.

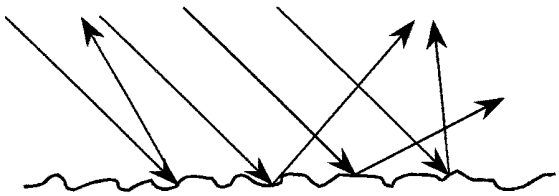
Name .....

We can see objects because light travels from them into our eyes. LUMINOUS objects make their own light, e.g. the Sun, a light bulb and a candle. Most objects do not make their own light. We see them because light bounces off them into our eyes. This is called REFLECTION.

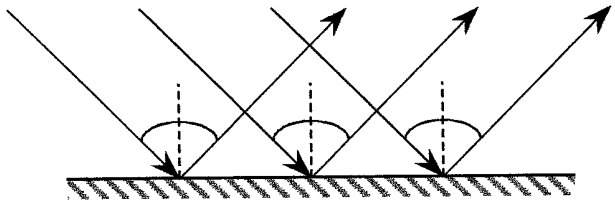


Mirrors.

Mirrors have a very smooth, shiny surface. All of the light rays bounce off them at the same angle. This is what makes a clear REFLECTION.



Light rays are reflected off the paper in all directions due to its rough surface.



Light rays hitting a mirror are all reflected at the same angle due to its smooth surface.

The rays that hit the mirror are called the INCIDENT RAYS. The diagram above shows that the **REFLECTED RAYS leave the surface of the mirror at the same angle that they came in at.**

Exercise - Complete the questions below.

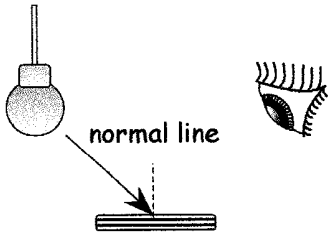
1) A L _ _ _ _ _ _ _ object gives off its own light.

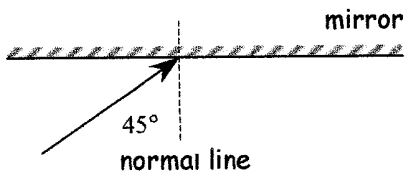
2) Underline the objects below that give off their own light.

TORCH BOOK CANDLE MIRROR GLOW WORM MOON SUN COIN FIREWORK

3) We can see our R _ _ _ _ _ _ _ _ _ _ in shiny, smooth surfaces.

4) Complete the diagrams below.

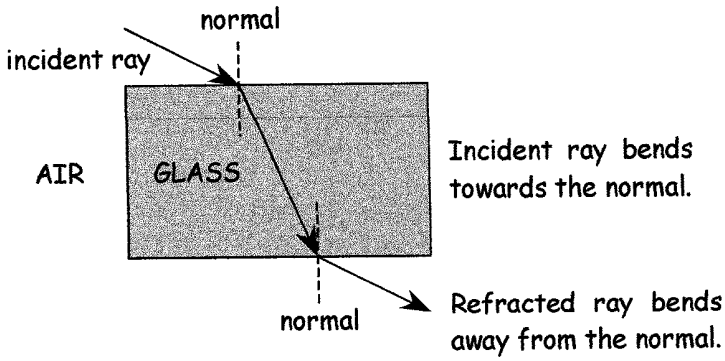




W.S.76. Refraction of light.

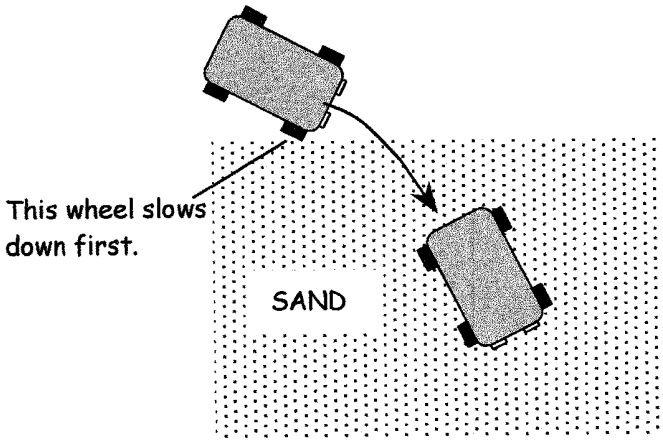
Name .....

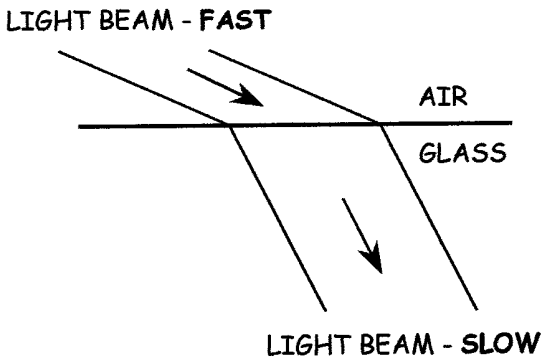
Any material that light can travel through is called a MEDIUM. When light rays travel from one medium to another they bend. This is called REFRACTION. The diagram shows how a ray of light bends as it travels from air, into a glass block, and out again.



How refraction happens.

The light bends because it travels more slowly in glass than it does in air. This can be compared to a car that travels more quickly on a road than it does on sand :





Exercise - Complete the sentences and diagram below.

1) Any material that light can travel through is called a M _ _ _ _ _

2) The bending of light is called R _ _ _ _ _ _ _ _ _

3) Light travels more _ _ _ _ _ _ in glass than it does in air.

4) Light bends as it passes from air to glass because it changes _ _ _ _ _

Complete the diagram below to show why the coin appears higher in the water than it really is.