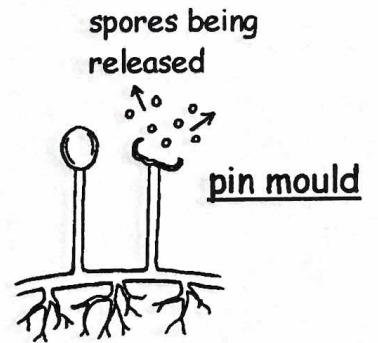


All of the millions of species (types) of living things can be sorted into groups. This is called **CLASSIFICATION**. They are sorted into groups that have features in common.

Plants without flowers.

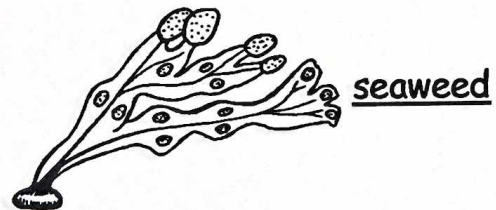
**FUNGI**

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.



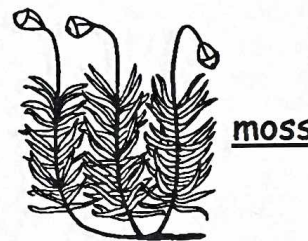
**ALGAE**

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



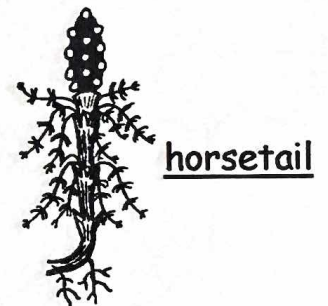
**MOSSES AND LIVERWORTS**

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



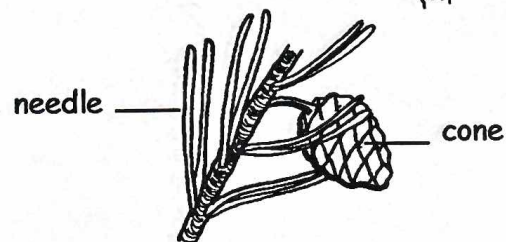
**FERNS AND HORSETAILS**

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



**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

Flowers contain sex organs which produce seeds for reproduction. The male sex cells are inside the pollen grains. The female sex cells are called OVULES. Pollen grains are carried from one flower to another by insects or wind. This is called POLLINATION. The sex cells then join together. This is called FERTILISATION. The fertilised ovules develop into seeds.

buttercup - insect pollinated.

grass flowers - wind pollinated.



The flowers are colourful and scented to attract insects.

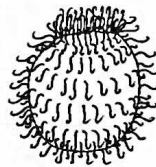


The flowers are light and feathery to catch the breeze.

When the flower dies the seeds are left inside a FRUIT. Fruits help to DISPERSE (spread out) the seeds. Three types of fruit are shown below.



Sycamore seeds have wings. They are dispersed by wind.



Burdock seeds have hooks that catch onto animals fur.



Blackberries are juicy but the seeds do not digest.

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

Flowers make ..... so that plants can reproduce. Pollination is when ..... is carried from one flower to another. Pollen can be carried by wind or ..... The insects visit the flower to drink the ..... Flowers are colourful and ..... to attract insects. Plants that use wind to pollinate their flowers are not brightly ..... They are light and feathery to catch the breeze.

Fertilisation is when the male and female sex cells ..... The fertilised ..... then develop into seeds. When the flower dies a ..... is left behind. Fruits help to ..... the seeds.

insects join pollen seeds ovules scented coloured nectar fruit disperse



**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



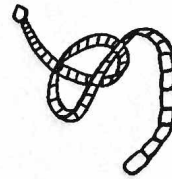
sea anemone

**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.



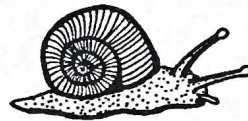
earthworm



leech

**MOLLUSCS**

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



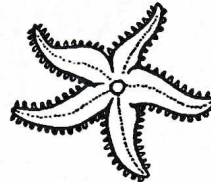
snail



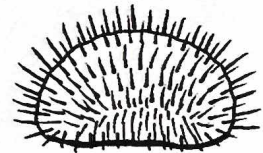
squid

**STARFISH AND SEA URCHINS**

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



starfish



sea urchin

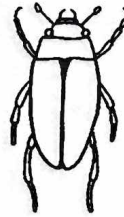
**Exercise** - Complete the sentences below.

- 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 \_\_\_\_\_

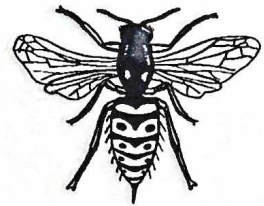
ARTHROPODS are invertebrates with a hard outer coating. They all have a segmented body with jointed legs. This is a very large group and it can be divided into the smaller groups shown below.

### INSECTS

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



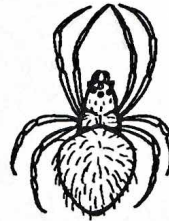
beetle



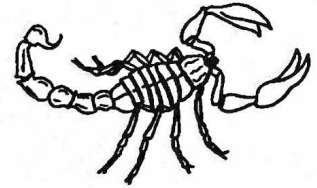
wasp

### 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.



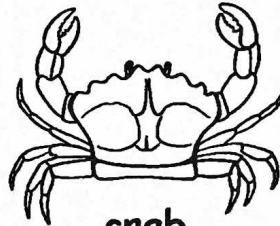
spider



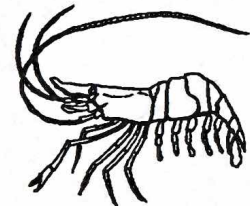
scorpion

### 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.

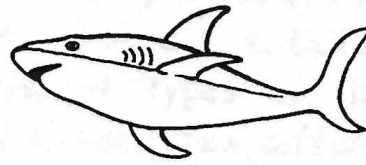
- 1) \_\_\_\_\_ all have a hard outer coating.
- 2) A fly is an \_\_\_\_\_
- 3) Insects usually have \_\_\_ legs and \_\_\_ wings.
- 4) Spiders have \_\_\_\_\_ legs.
- 5) Scorpions have a \_\_\_\_\_ at the end of their tails.
- 6) Crabs and \_\_\_\_\_ are closely related.
- 7) The bodies of centipedes are made up of many \_\_\_\_\_



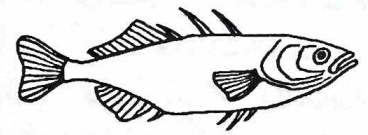
VERTEBRATES have a backbone and an inside skeleton. Read the information below about the groups of vertebrates.

**FISH**

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



shark



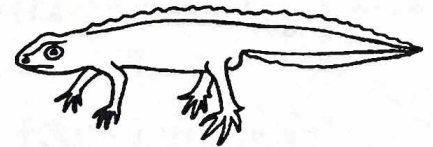
stickleback

**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.



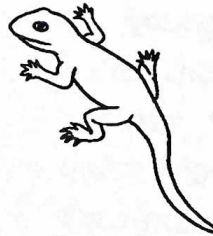
frog



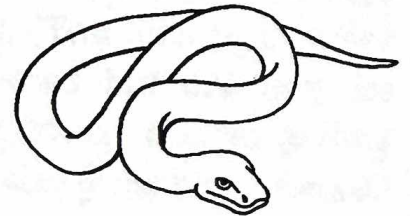
newt

**REPTILES**

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



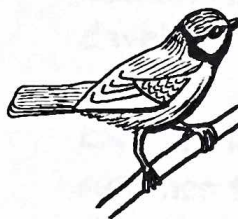
lizard



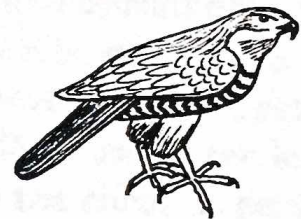
snake

**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



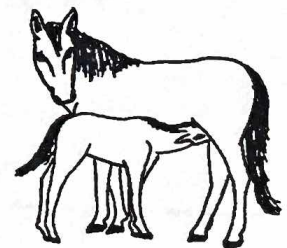
sparrowhawk

**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 .....

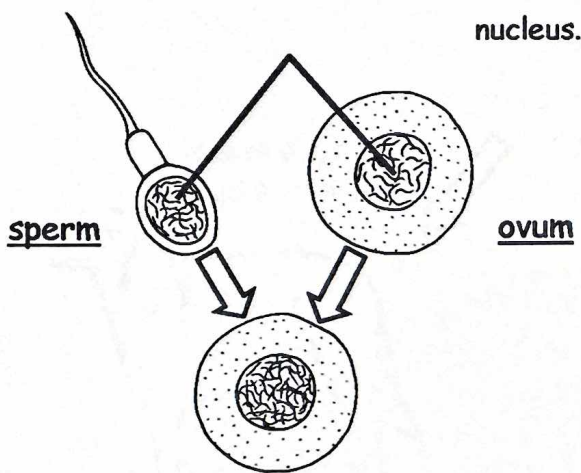
amphibians gills reptiles birds hair milk wings damp feathers mammals



All animals and plants are different from each other. Even members of the same species (type) show small differences and no two humans are exactly alike. This is called VARIATION. Some features that vary which are easy to study in humans are height, mass, hair colour, eye colour and shoe size. CONTINUOUS VARIATION is when a feature shows many different types eg. height. DISCONTINUOUS VARIATION is when a feature only shows a few different types eg. human blood groups and whether a person can roll their tongue or not.

Variation is caused partly by different GENES (instructions) that individuals inherit from their parents and partly by different ENVIRONMENTS (surroundings) that individuals live in :

Genetic (inherited)



The chromosomes hold the GENES that control a person's features and how they develop. All sperms and ova contain a different set of genes therefore every person receives a different combination from their parents.

Environment (surroundings)

FOOD SUPPLY affects the growth rate of young animals. Two identical twins have the same genes but one may be heavier than the other due to eating more food. Plants also grow better in soil that has a good water and mineral supply.

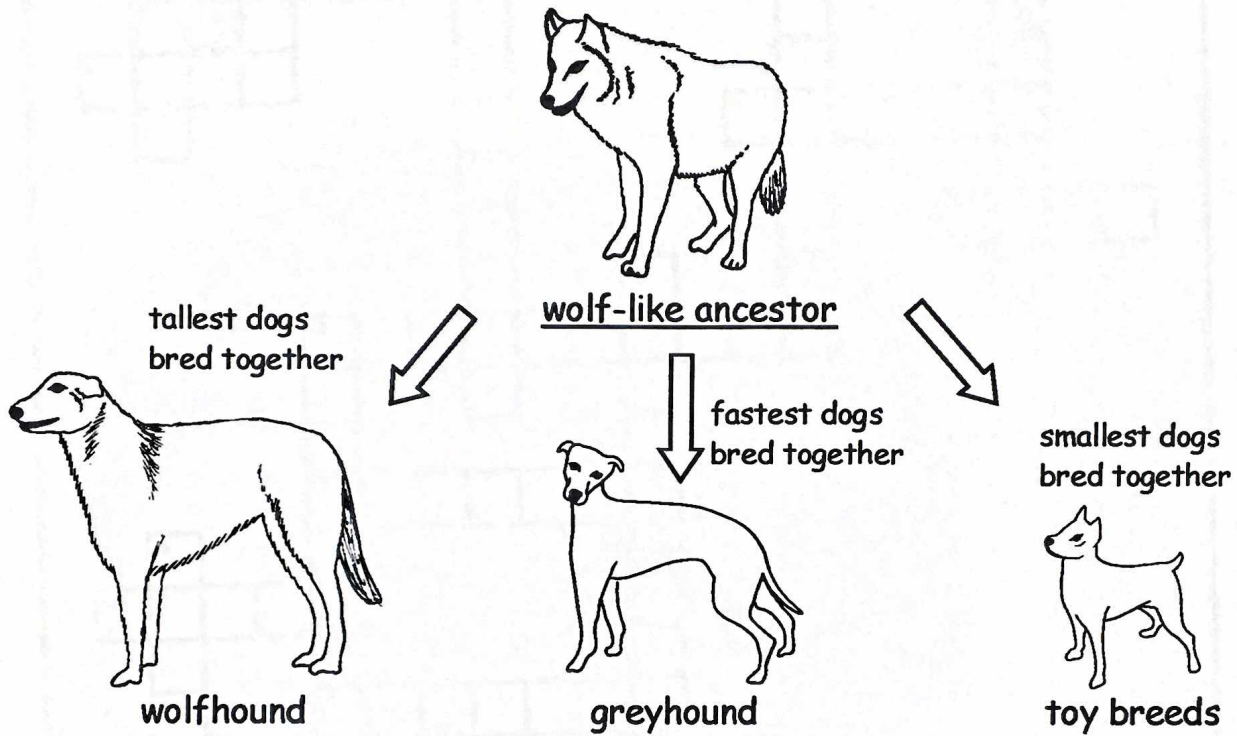
CLIMATE affects how animals and plants develop. Some animals grow a thicker coat if their environment becomes colder. Plants usually grow faster in the sun than they do in the shade. A person's skin may become darker (tanned) if they are exposed to more sunlight.

Exercise - Complete the sentences below.

- 1) We are all different from each other. This is called V \_\_\_\_\_
- 2) The two types of variation are C \_\_\_\_\_ and discontinuous.
- 3) An example of continuous variation in humans is H \_\_\_\_\_
- 4) We are all different, partly because of the G \_\_\_\_\_ we inherited from our parents and partly because of our E \_\_\_\_\_
- 5) Every sperm and O \_\_\_\_\_ contains a different set of genes.
- 6) Food supply affects the G \_\_\_\_\_ rate of young animals.
- 7) Plants will grow larger in soil that is rich in M \_\_\_\_\_



Humans have changed wild plants and animals by **SELECTIVE BREEDING**. This means picking out plants or animals that show the features that humans like. These are then bred together so that they pass on their features to the next generation. After many generations the plant or animal may look quite different to its wild ancestor. Dogs, cats, pigeons, rabbits, goldfish, farm animals and crops have all been produced in this way. Dog breeds have been developed from a wild wolf-like ancestor.



Scientists think that in nature all plants and animals have slowly changed over millions of years. This is called **EVOLUTION**. Those that are the best adapted to their environments (surroundings) have a better chance of surviving and passing on their features. Therefore nature is selecting which ones survive and breed. This idea is called **NATURAL SELECTION**.

Exercise - Complete the sentences below.

- 1) Humans have **C** \_\_\_\_\_ animals and plants by selective breeding.
- 2) Only those that show the best **F** \_\_\_\_\_ are allowed to breed.
- 3) Racing pigeons have been developed by selecting the **F** \_\_\_\_\_ birds.
- 4) Wolfhounds have been developed by selecting the **T** \_\_\_\_\_ dogs.
- 5) **E** \_\_\_\_\_ means how plants and animals have slowly changed.
- 6) Natural **S** \_\_\_\_\_ causes evolution.