

Science

Living Things and Their Habitats



Just a quick note...

I've added a bunch of slides from different places to help you learn the things in these lessons. If you get very, very stuck, you can always contact the school by phone. Our number, if you don't know, is on the website. Either I, or another teacher, will get into contact with you.

Mr Laws.



Lesson 1: Grouping Living Things



Aim

- I can group living things in a range of ways.
- I can use a range of methods to sort living things.

Success Criteria

- I can sort living things into groups.
- I can generate criteria to sort living things.
- I can sort living things into a Venn diagram.

Life Processes

What do all these things have in common?



Life Processes

All of these images are of living things. Sometimes we call them '**organisms**'.

Even though they might be very different from each other, all of these organisms share certain characteristics. All living things do certain things to stay alive. These are called **life processes**.

All animals, including humans, do these things. Plants do too, although they do them in different ways.

We can remember life processes by thinking about Mrs Gren.



Life Processes

Movement

Respiration

Sensitivity

Growth

Reproduction

Excretion

Nutrition

MRS GREN



Life Processes

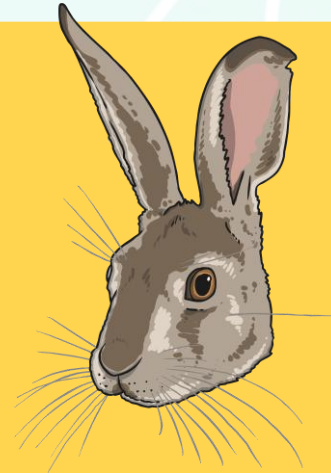
Movement

All living things move.

Animals
move around
to get from
place to
place.



Plants grow
and turn
towards the
light.



A hare runs to
escape from
danger.



A sunflower
moves to turn
its face towards
the sun.

Life Processes

Respiration

All living things respire.

Plants and animals both use oxygen gas from the air to turn their food into energy. This is called **respiration**.



Land animals breathe oxygen through their mouths or noses. Sea creatures breathe oxygen dissolved in the water through their gills. Both types of creature then use this oxygen in their body for **respiration**.

Plants both respire and photosynthesise. While photosynthesis happens when the plant is in light, plants respire by taking in oxygen and giving out carbon dioxide during darkness.

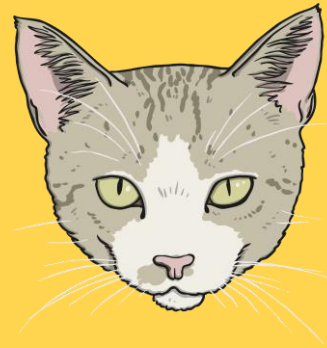


Life Processes

Sensitivity

All living things are sensitive.

Every living thing can detect changes in their surroundings.



Animals use their senses to see, hear, taste, touch and smell the world around them.



Plants can also detect changes in the environment. This mimosa plant curls up when you touch it!

Life Processes

Growth

All living things grow.

Animals grow from babies to adults.

Seeds grow into plants.



This ocean mola started life as an egg not much bigger than a full stop. It will grow to weigh about 1000 kg - this is the same size as a large bull!




Bamboo can grow up to 3cm every hour.

Life Processes

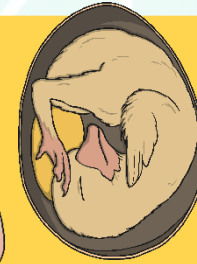
Reproduction

All living things reproduce.



Animals have young.

Plants produce seeds from which more plants grow.



Animals lay eggs or give birth to live young.



Most plants reproduce by forming seeds.

Life Processes

Excretion

All living things excrete.

Waste products
are removed
from the body.

Both plants
and animals
have to get rid
of excess gas
and water.



Animals excrete
waste through
urine and faeces.



Leftover gases
and water leave
plants from
their leaves.

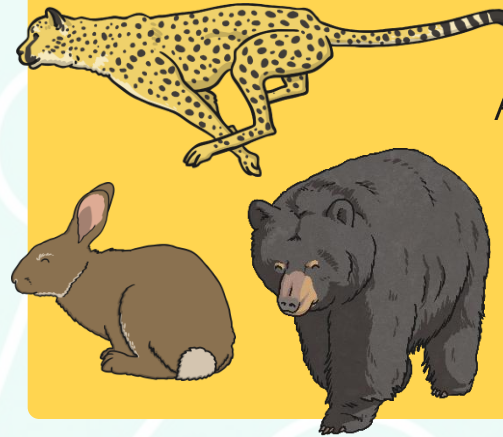
Life Processes

Nutrition

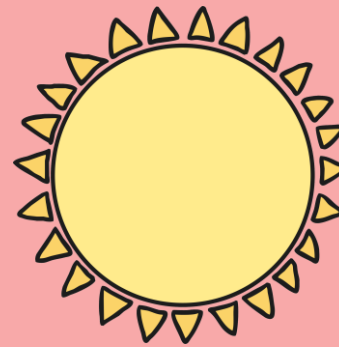
All living things need nutrition.

Green plants make their own food using sunlight.

Food is eaten to provide energy to live.



Animals may be carnivores, herbivores or omnivores.

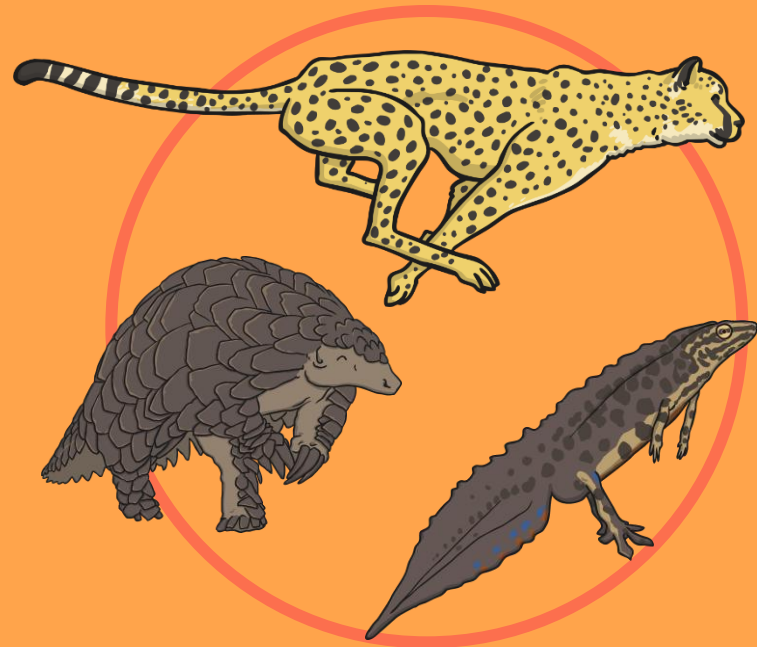


Green plants make their own food using the energy from the sun.

Life Processes

All living organisms share these characteristics. This is how we know they are alive!

Living things have lots of other similarities, and many differences too. We can use these similarities and differences to sort the living things into groups.



Grouping Living Things

Think of a way we could sort these organisms into two groups.



Grouping Living Things



Here the organisms have been sorted into two groups. We have used a diagram to represent these groups.

Can an organism be in both groups at the same time?



plants



animals

Grouping Living Things



Here, an organism cannot be both an animal and a plant, so it can not be in both groups at the same time.



plants



animals

Grouping Living Things



This is called a Venn Diagram. Where does a cactus go in this diagram? How about a polar bear?



How is this diagram different to the previous diagram?

Criteria



We have asked some questions to sort our living things into groups so far.
We sometimes call these criteria, which means a rule that we use to decide something.

Plant or animal.

Lives in the desert or does not live in the desert.

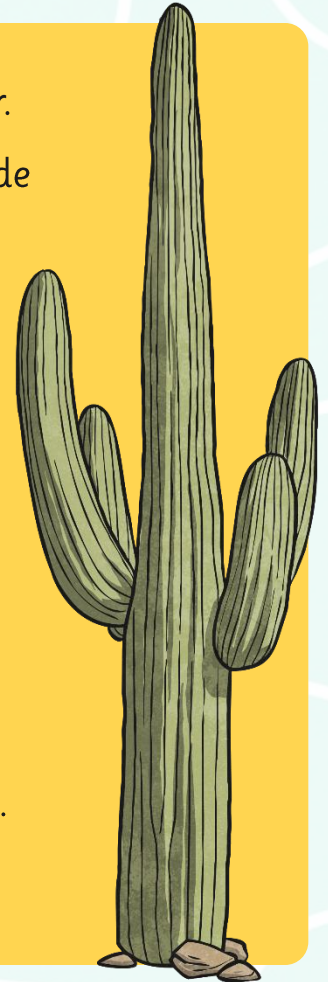
Has legs or does not have legs.

Lives on the land or lives in the water.

Today, you are going to be sorting animals.

With a partner, think of different groups that you could sort animals into.

Think of as many different groups as you can.



Sort these organisms into a Venn Diagram

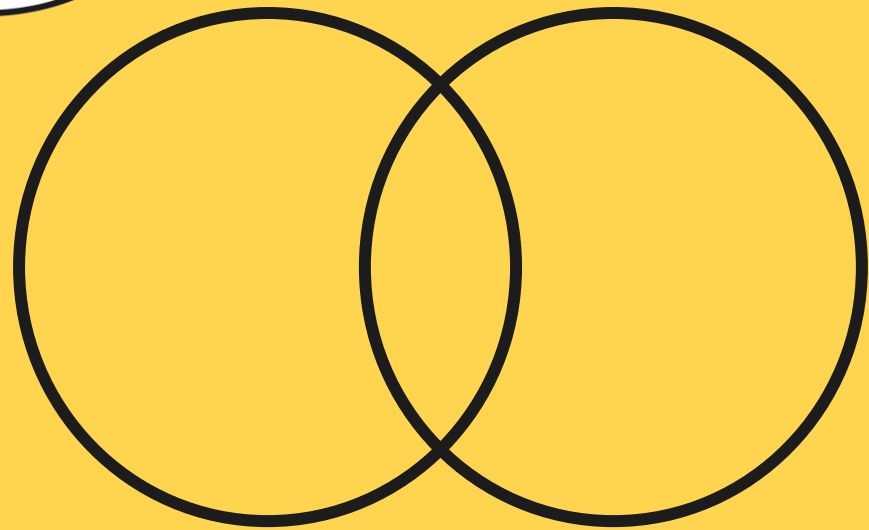




What
criteria did
you think
of?

How many different ways can
you sort these organisms?

Can you make a list of six of
your own organisms and sort
them using a Venn diagram?



Aim



- I can group living things in a range of ways.
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Success Criteria

- I can sort living things into groups.
- I can generate criteria to sort living things.
- I can sort living things into a Venn diagram



Lesson 2: Classifying Vertebrates



Aim

- I can generate questions to use in a classification key.
- I can identify vertebrates by observing their similarities and differences.

Success Criteria

- I can generate questions about animals.
- I can use questions to sort animals in a key.
- I can see similarities and differences between vertebrates.
- I can use these to identify vertebrate groups.

Classification

Scientists think that there are 7.77 million species of animals in the world, living on the land, in the sky and in the sea.

We have discovered and named about 1.4 million of these...which means that over 6 million species of animal are yet to be discovered!



We have already discovered:

5500 species of mammal

10 400 species of bird

10 000 species of reptile

7300 species of amphibian

33 000 species of fish

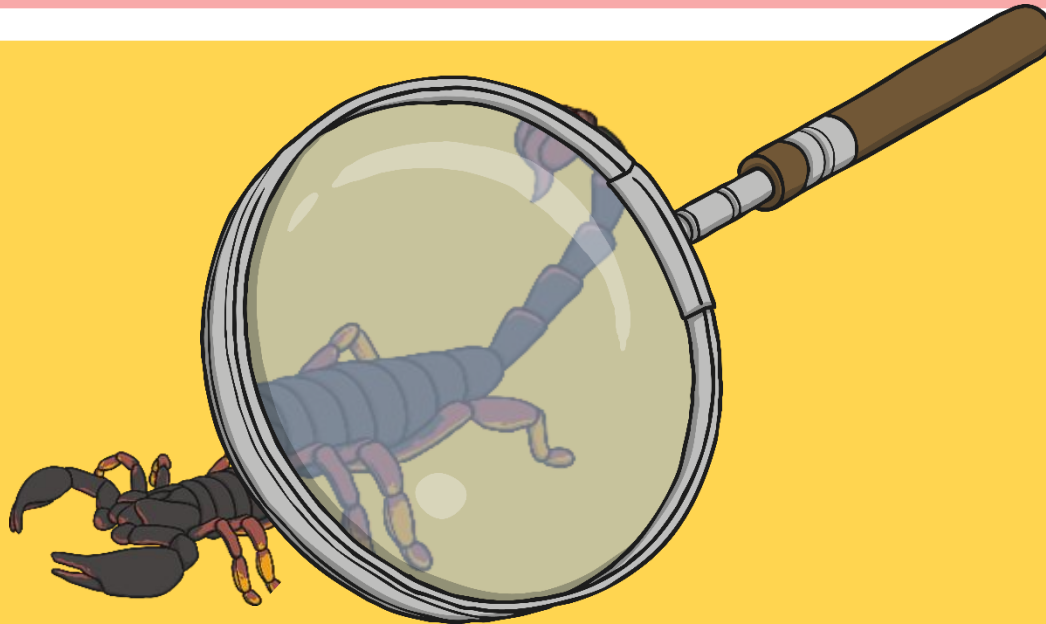
1 305 000 kinds of invertebrate

Which kind of creature are we?



Classification

When scientists discover a new animal, they give it a name and record everything they know about it.



What kind of information do you think they will record?

Classification

Hadogenes troglodytes
(Peters, 1861)

Common names:

Often known as South African rock scorpion or the flat rock scorpion.

Distribution:

Africa (Botswana, Mozambique, South Africa, Zimbabwe).

Habitat:

Lives in dry bushveld habitats in rocky areas.

Appearance:

These scorpions have very elongated, flattened bodies and powerful claws.

Venom:

This species has a mild venom. It will rarely sting, and usually defends itself by using the powerful claws.

Latin name

Who discovered it and when



Classification

With so many living things to make records of, and so many yet to discover, it is important that we have a system to organise and make sense of the information we have about them.

We organise living things into groups based on their similarities and differences, so that we can learn more about what makes each species unique. The differences between living things is sometimes called **variation**.



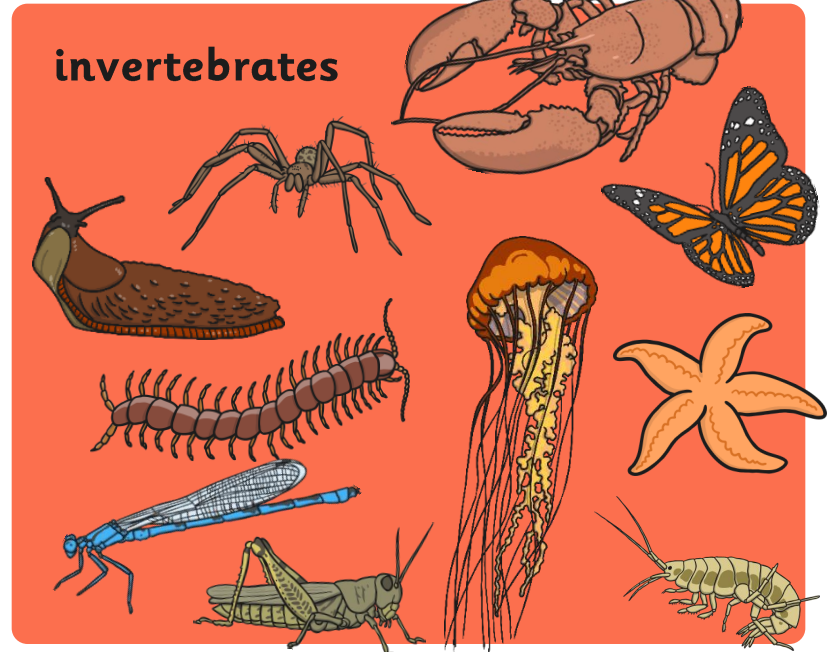
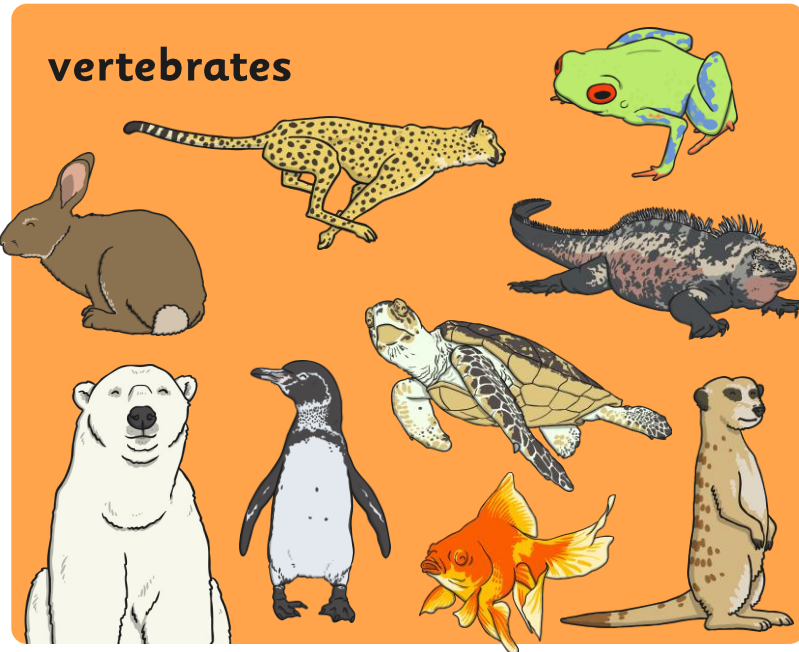
Classification



It is easy to sort most of the living things we can see in the world into two groups: plants and animals.

Plants and animals share life processes, but they do them very differently. Can you remember some of the differences between plants and animals?

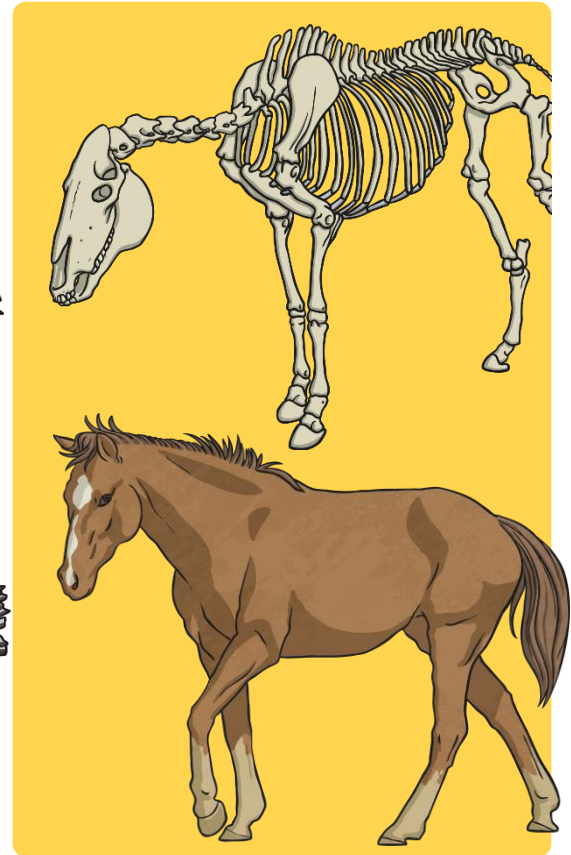
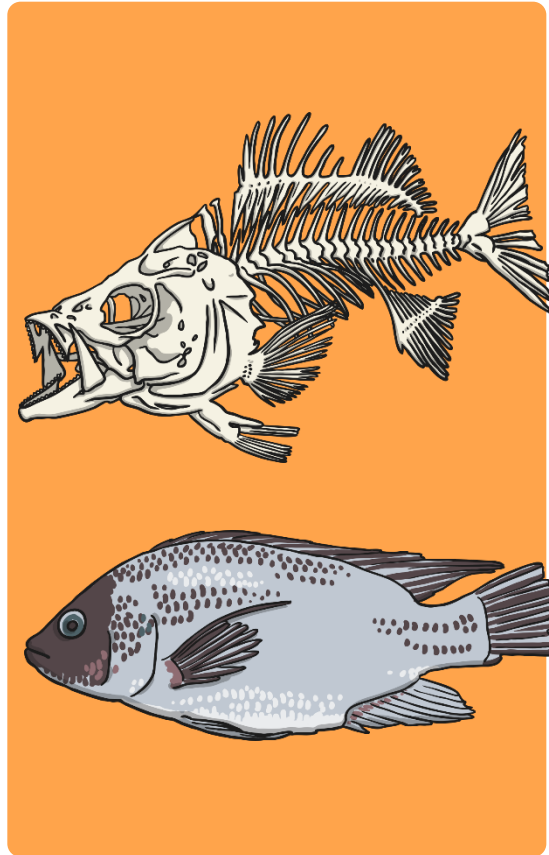
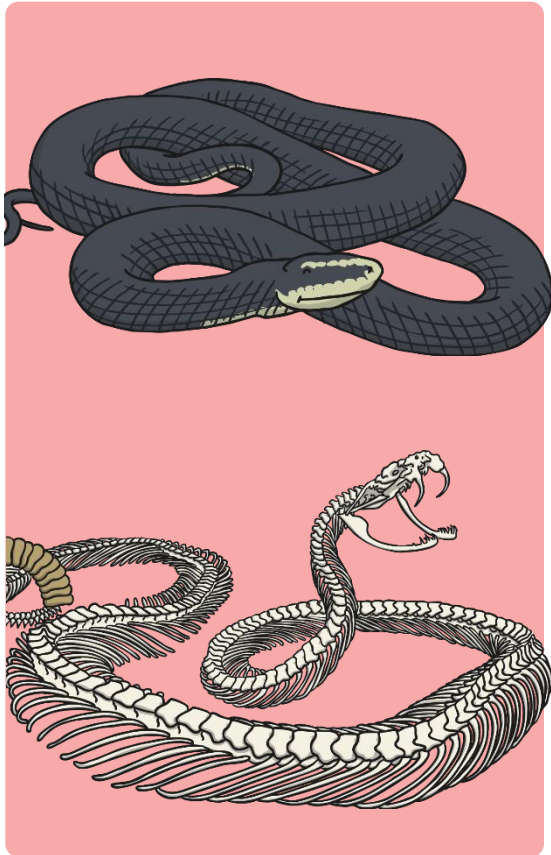
Animal Groups



When looking at animals, scientists usually split them into two groups: **vertebrates** (animals **with** a backbone) and **invertebrates** (animals **without** a backbone).

Animal Groups: Vertebrates

Vertebrates are animals with a backbone. They have a hard skeleton made of bone. It holds their body up and gives them shape.



Animal Groups: Invertebrates

Invertebrates do not have a backbone, or a skeleton made of bones. Many have a hard shell outside their bodies to protect them. Others have soft, flexible bodies.

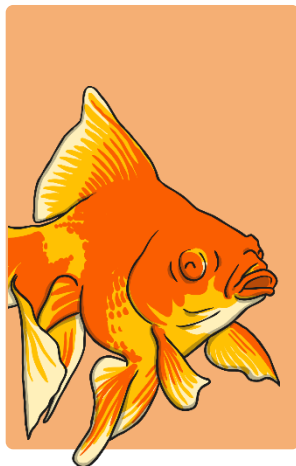


Animal Groups

Vertebrates can be separated into five broad groups:



mammal



fish



reptile



bird



amphibian

Mammals

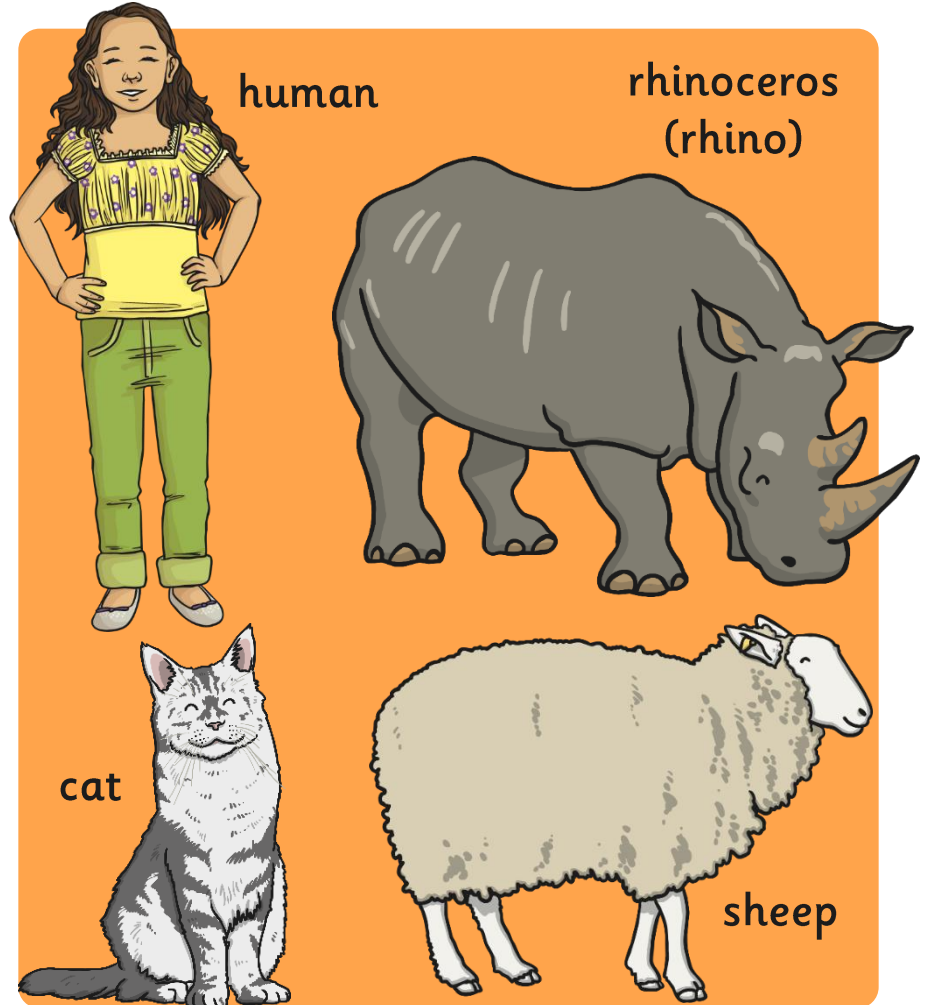
Mammals have warm blood, and have hair or fur on their bodies.

Mammal babies are born alive.

The mothers feed their babies milk.

What do animals of this kind have in common?

Can you think of any differences between them?



Amphibians

Amphibians live on land
and in water.

They are cold-blooded.

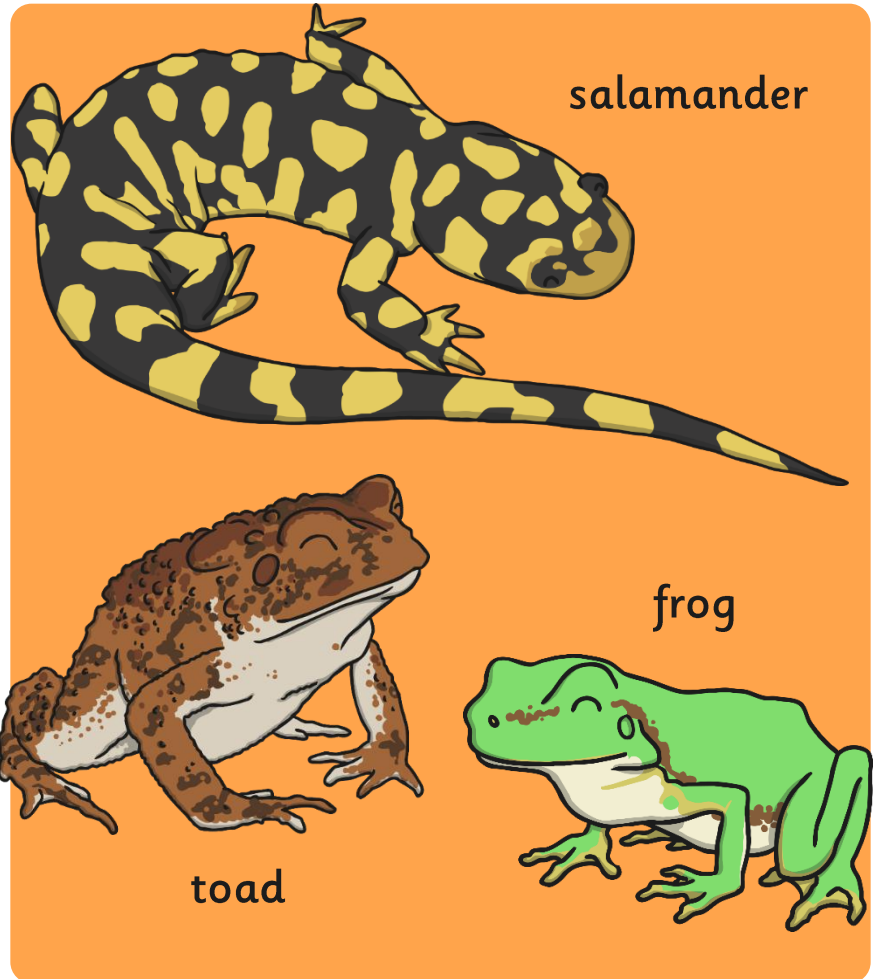
They have gills when they
are young.

They have smooth skin.

They lay their eggs in water.

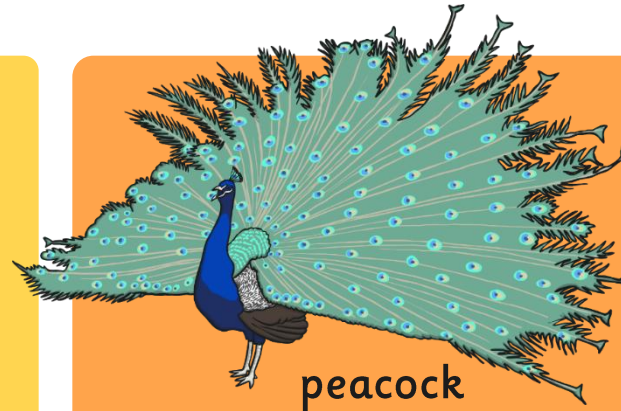
What do animals of this
kind have in common?

Can you think of any
differences between them?



Birds

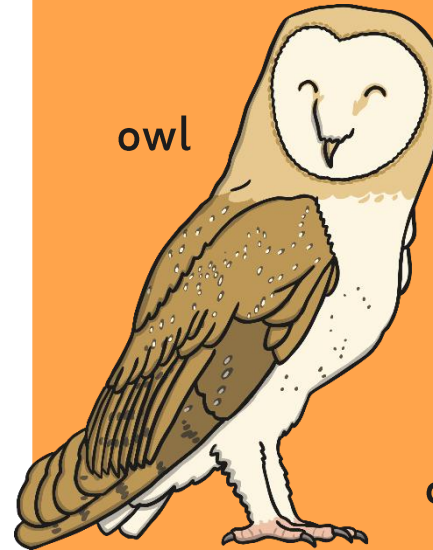
Birds have a beak, wings,
feathers and 2 legs.
They lay eggs on land.
They have warm blood.



peacock



penguin



owl



chicken

What do animals of this
kind have in common?
Can you think of any
differences between them?

Fish

Fish live in water.

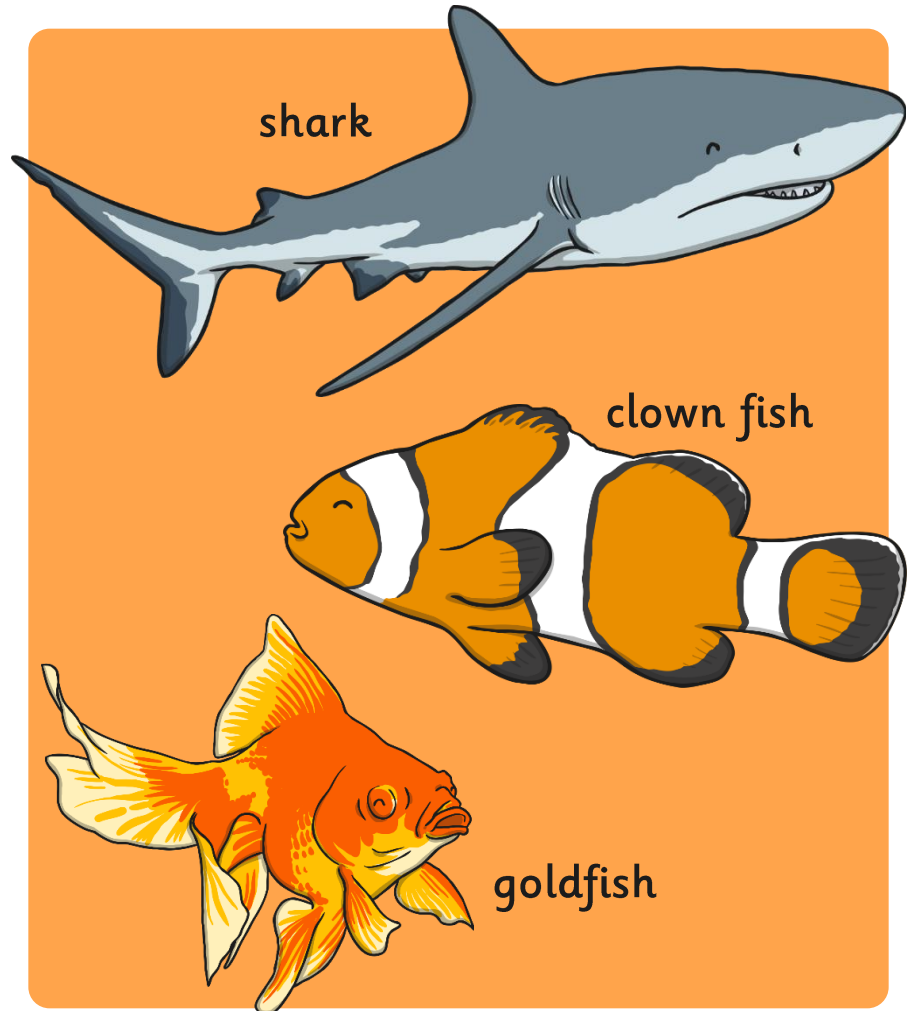
They have fins instead of legs and gills instead of lungs.

They lay their eggs in water.

They have cold blood and scaly skin.

What do animals of this kind have in common?

Can you think of any differences between them?

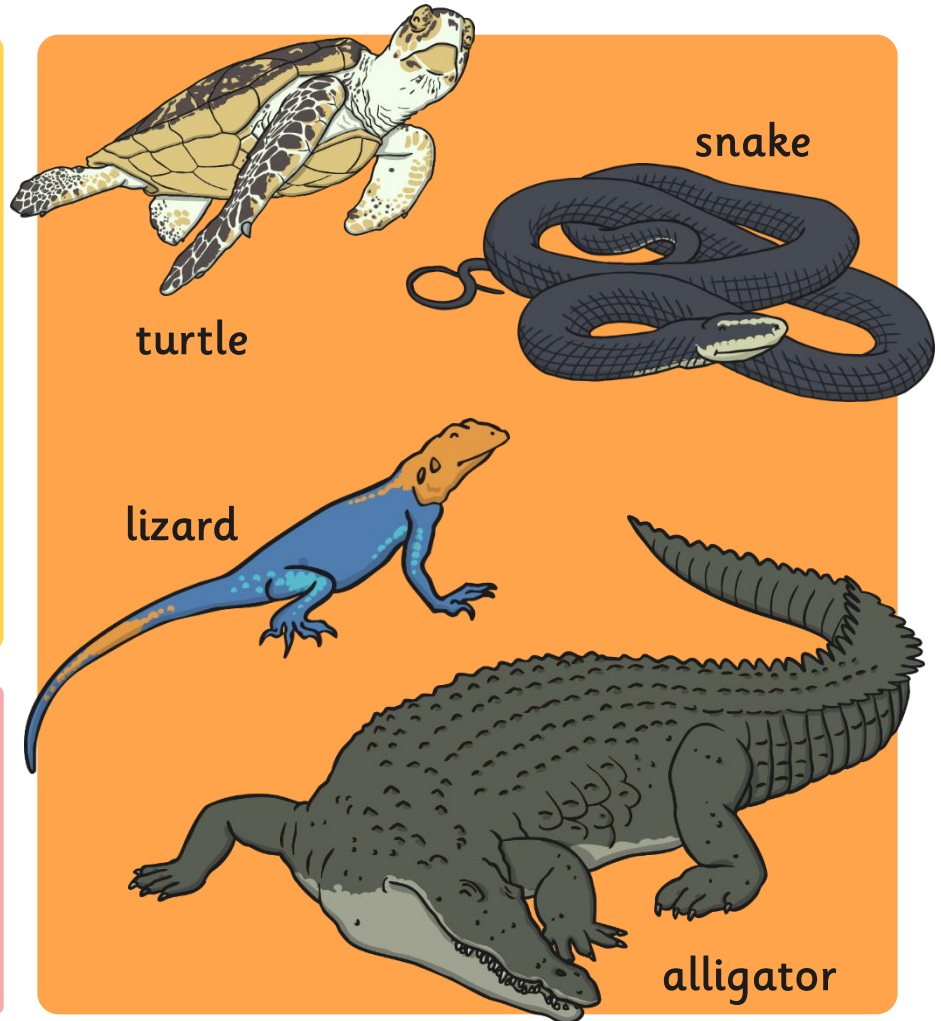


Reptiles

Some reptiles live on land, and some in water. They have lungs that breathe air.

They have scales and are cold-blooded.

They lay their eggs on land.



What do animals of this kind have in common?

Can you think of any differences between them?

Aim



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