Living Things and Their Habitats:
Classifying Vertebrates

Aim:	Success Criteria:	Resources:
To Explore and use classification keys to help group, Identify and name a variety of living things in their local and wider environment by generating questions to sort vertebrates in a classification key.	I can generate questions about animals.	Lesson Pack
I can generate questions to use in a classification key.	I can use questions to sort animals in a key.	
Identifying differences, similarities or changes related to simple scientific ideas and processes by identifying vertebrates by their similarities and differences.	I can see similarities and differences between vertebrates.	
I can identify vertebrates by observing their similarities and differences.	I can use these to identify vertebrate groups.	

	Key/New Words:	Preparation:
	Variation, classification, vertebrates, invertebrates.	Vertebrates Photo Sorting Cards - 1 per class
		Vertebrates Activity Sheet - 1 per child
		Key Questions Activity Sheet - 1 per child

Prior Learning: Children will have sorted animals into a variety of groups in lesson 1.

Learning Sequence

Classification: Read the information on the **Lesson Presentation** to introduce children to the concept of classification, using the questions to prompt children to share any prior knowledge.

Animal Groups: Introduce the classifications of vertebrate and invertebrate, asking children to give examples of each. Explain that vertebrates can be further split into five groups: amphibians, birds, fish, mammals and reptiles. Explain the broad characteristics of each, asking children to note their similarities and differences. Distribute the cards from the **Vertebrates Photo Sorting Cards**, one per child. As a class, sort the cards into animal groups.

Vertebrates Activity Sheet: Children complete the **Vertebrates Activity Sheet** by answering the 'yes or no' questions to sort the vertebrates into animal groups.

Classification Keys: Introduce the idea of classification keys as a way of sorting animals into groups through a series of 'yes or no' questions. Children complete the differentiated **Key Questions Activity Sheet,** generating questions to sort vertebrates using a simple branching key.

★ Children generate four questions to sort vertebrates.

★★ Children generate three questions to sort vertebrates.

★★★ Children generate two questions to sort vertebrates.

Twenty Questions: Split the class into two teams and choose a volunteer from one team to come to the front of the class. The volunteer choses an animal. The other team can ask the volunteer up to twenty questions about the animal but the volunteer can only answer with a 'yes or no'. If the other team are able to guess the animal within 20 questions, they win a point. If they cannot, the team of the volunteer win a point. The team with the most points after three rounds wins.

Task*it*

Playit: Play this _____ to learn more about the differences between the five groups of vertebrates.

Activityit: Practice identifying animal groups with this _____

Tableit: Complete a table with the characteristics of the vertebrate groups with this _____.

Science

Living Things and Their Habitats

flamingo
vertebrate
bird
feathers

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:
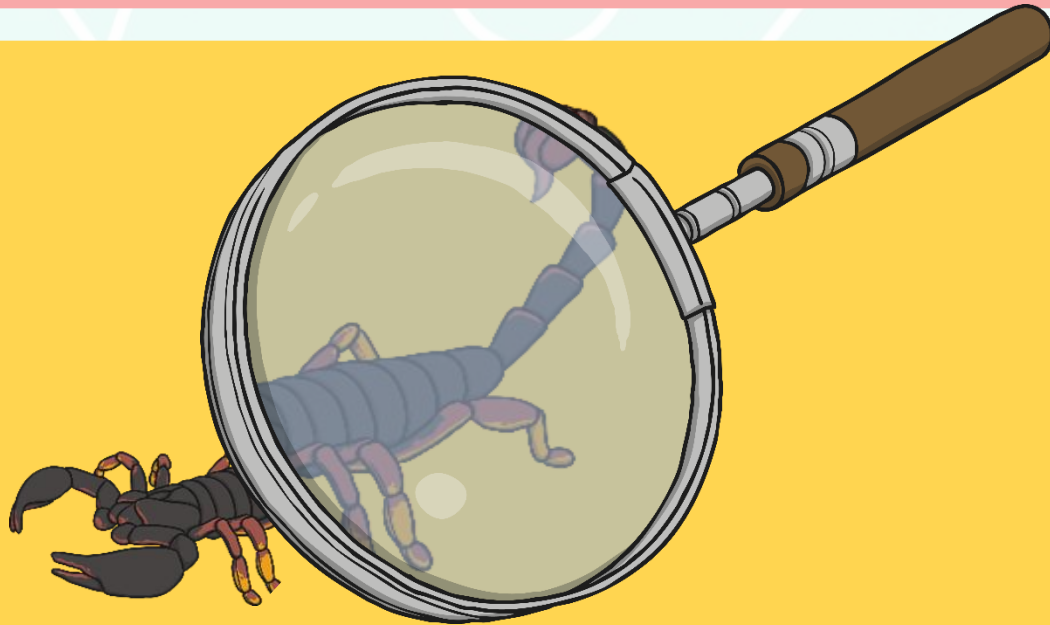**5500** species of mammal
10 400 species of bird
10 000 species of reptile
7300 species of amphibian
33 000 species of fish
1 305 000 kinds of invertebrate

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)

Latin name

Who discovered it and when

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.

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.**
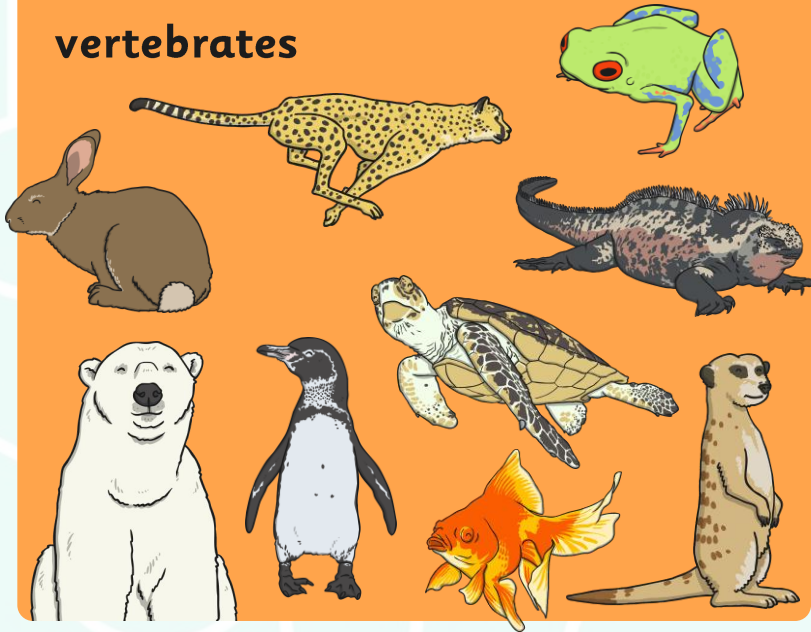
Classification

Plants
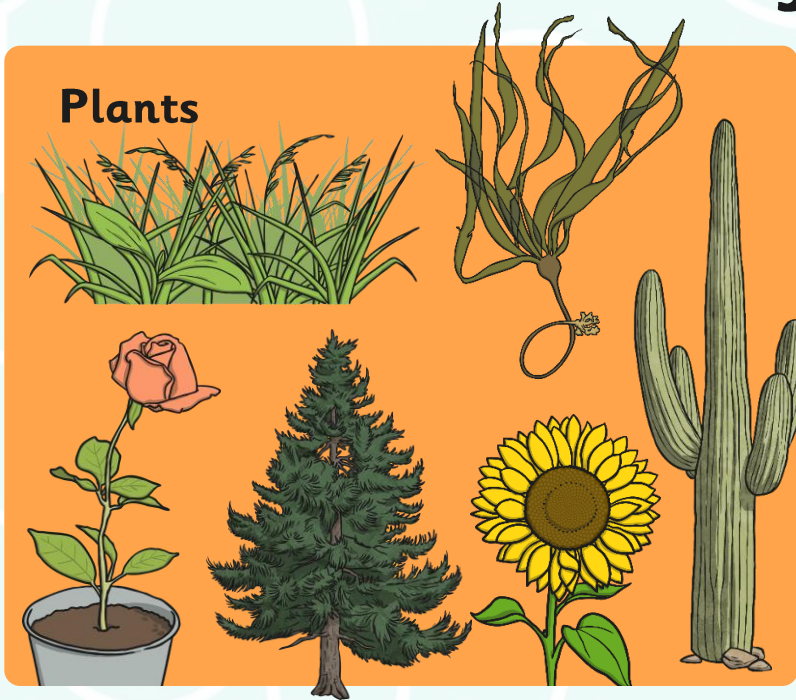
Animals

It is easy to sort most of the living things we can see in the world into two groups: plants and animals.
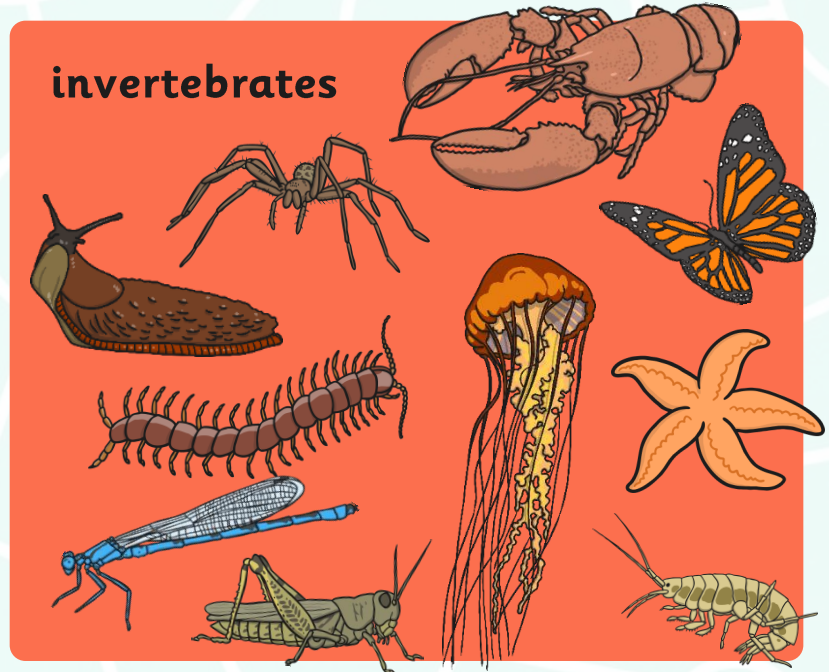
Plants and animals share life processes, but they do them very differently. Can you remember some of the differences between plants and animals?
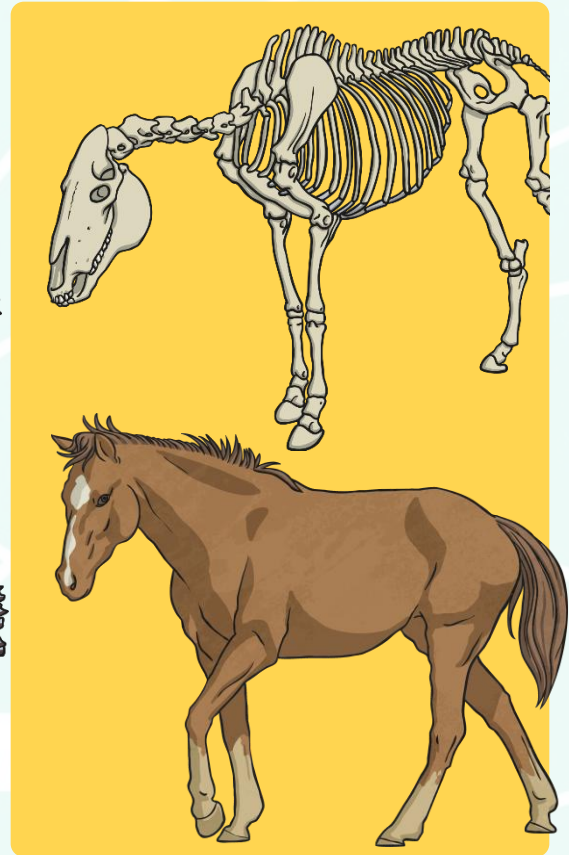
Animal Groups

vertebrates

invertebrates

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.
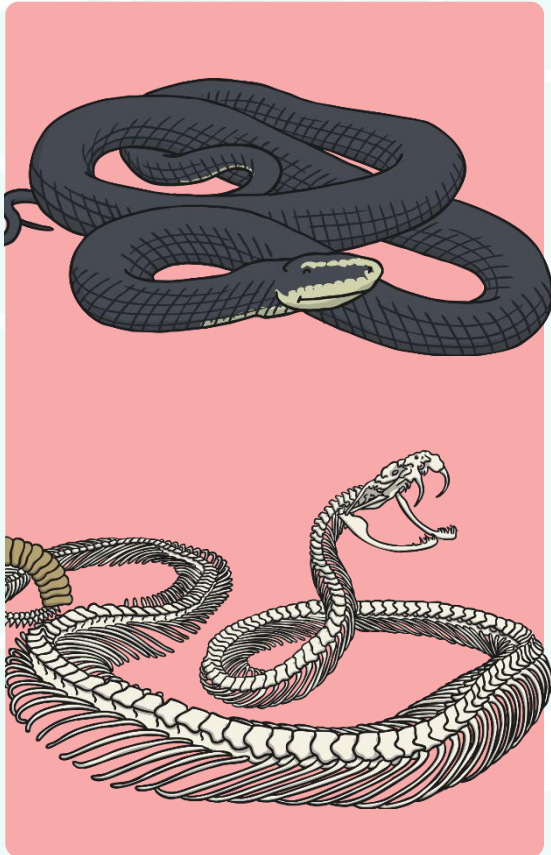
Animal Groups: Invertebrates

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:

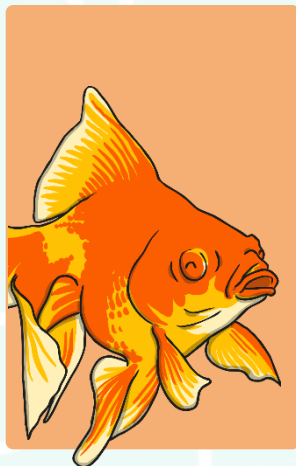mammal   fish   reptile   bird   amphibian
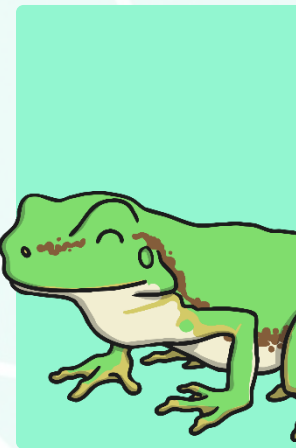
Mammals

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?

human

rhinoceros (rhino)

cat

sheep
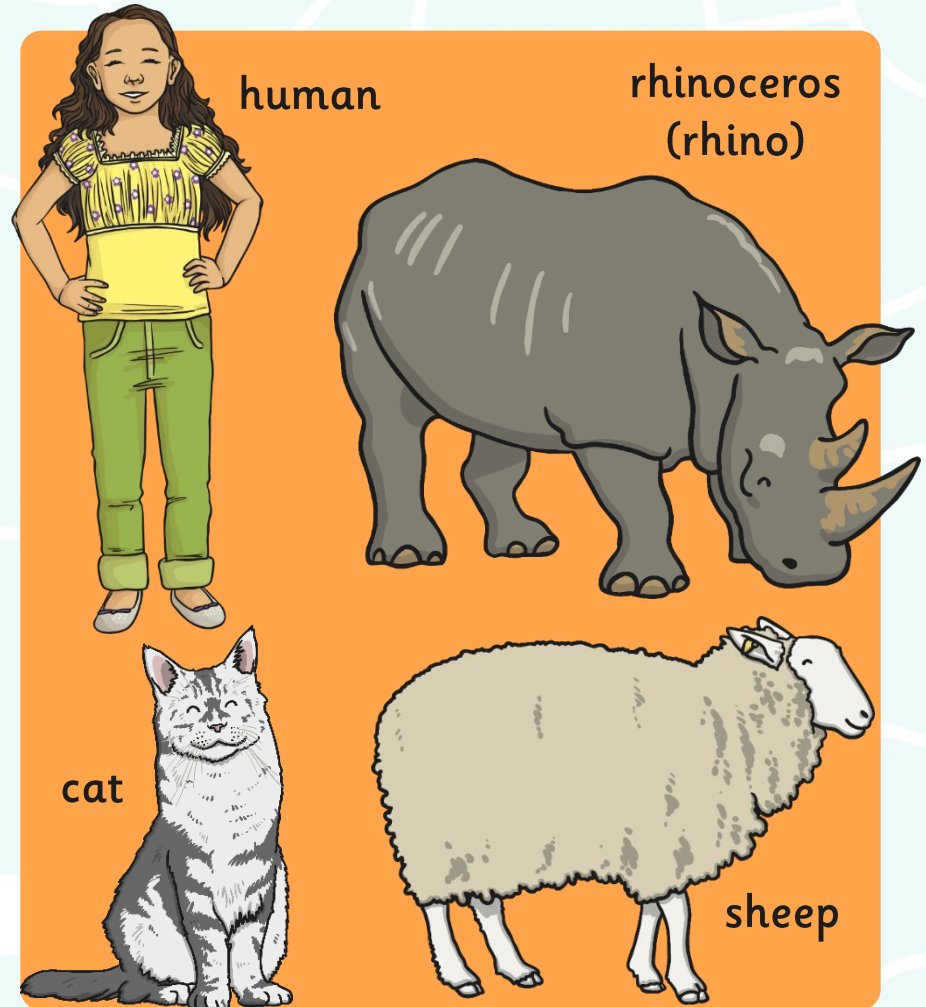
Amphibians

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?

salamander

frog

toad

Birds

Birds have a beak, wings, feathers and 2 legs.

They lay eggs on land.

They have warm blood.

What do animals of this kind have in common?

Can you think of any differences between them?

peacock

penguin

owl

chicken

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?

shark
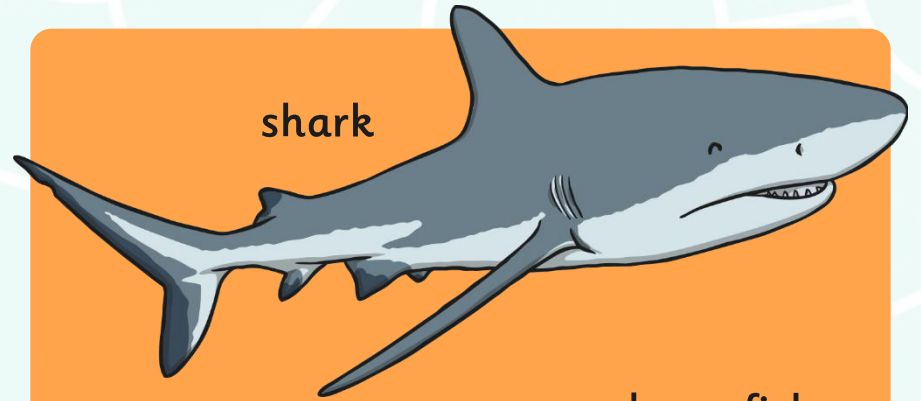
clown fish
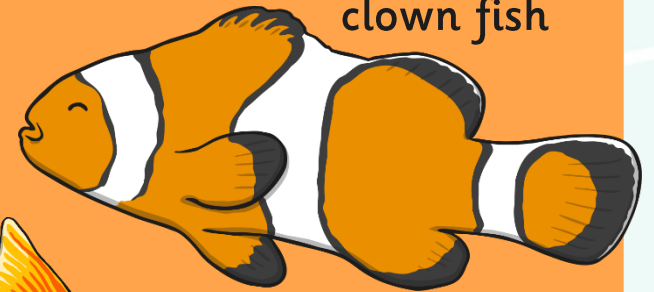
goldfish

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?
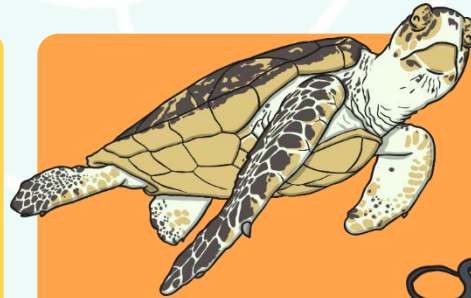
turtle
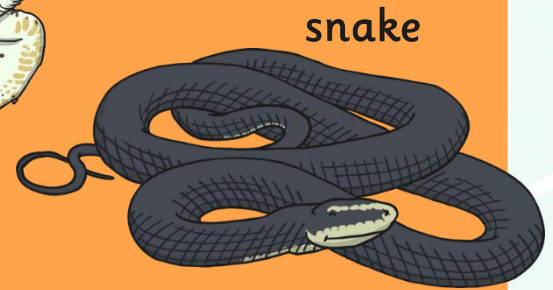
snake

lizard

alligator

Vertebrates Activity Sheet
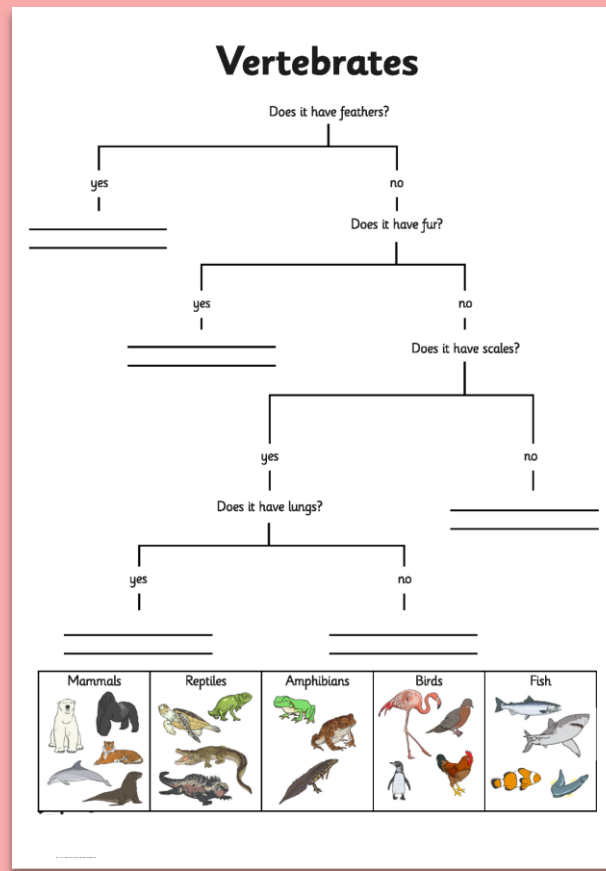
Classification Keys
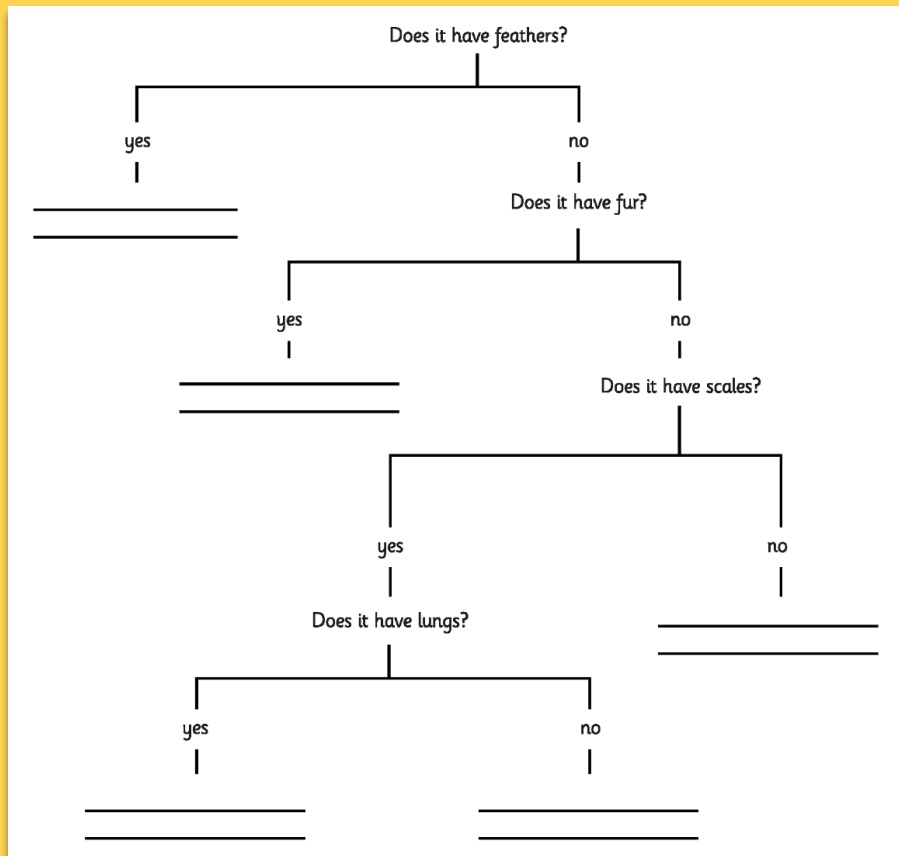
The activity you have just done uses a kind of classification key.

Classification keys are a way of identifying living things through a series of questions based on their similarities and differences.

For example: 'Does it lay eggs?'

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Classification Keys

Each question has a yes or no answer and leads you one step closer to the name of a living thing.

Does it lay eggs?

Yes

No

Can it fly?

mammal

Yes

No

bird

amphibian
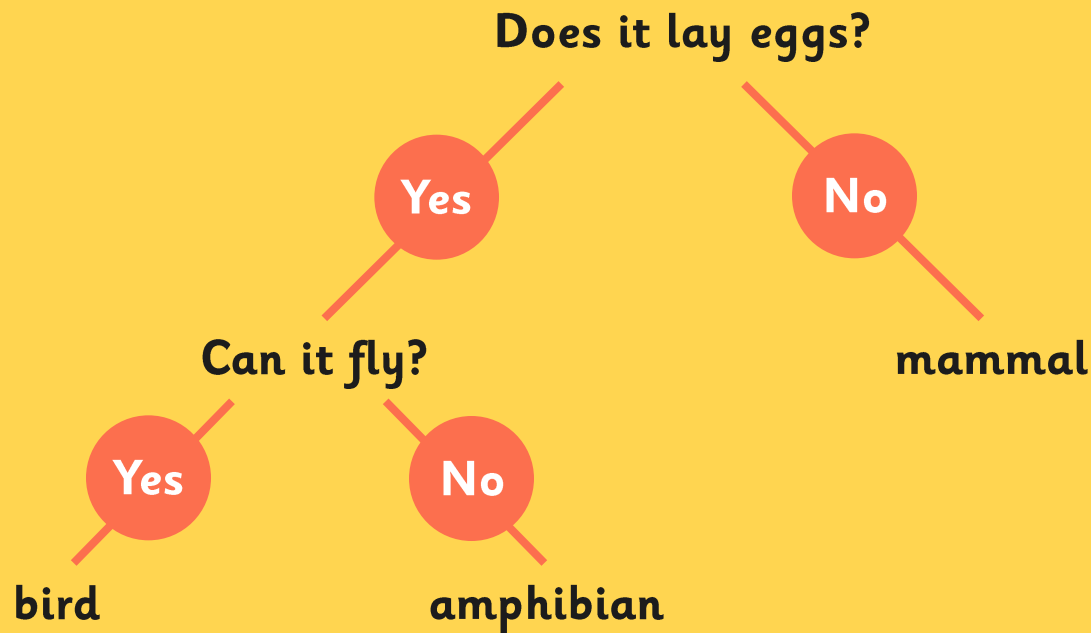
Classification Keys

The questions start out very general at the beginning of the key as they help you sort the animals into broad groups.

Does it lay eggs?

Yes

No

bird

mammal

Does it have a long, thin beak?

Yes

No
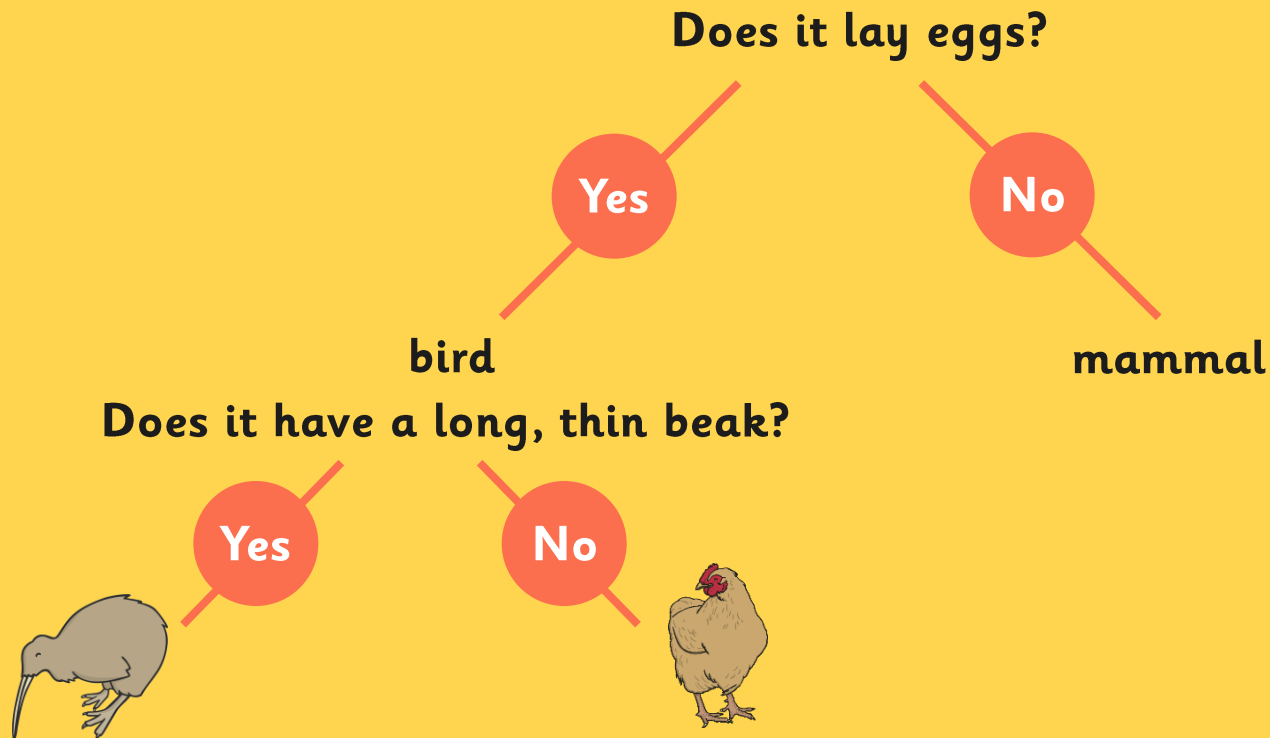
Classification Keys

Have a go at making up your own questions for a classification key.

Key Questions

Can the animal fly?

- yes
  - yes — bat
  - no — canary
- no
  - yes — tuna
  - no
    - yes — turtle
    - no — frog

Can you think of other animals that could fit at the end of the key?

Twenty Questions

- Split into two teams. Choose a volunteer from the first team.

- The volunteer chooses an animal.

- The other team can ask the volunteer up to twenty questions about the animal but the volunteer can only answer with a 'yes or no'.

- If the other team are able to guess the animal within 20 questions, they win a point.

- If they can't, the volunteer's team wins a point.

- Next, the other team chooses a volunteer.

- The team with the most points after three rounds wins.

Aim

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