Classification

In this unit we will explore

1. How living organisms can be grouped in different ways
2. How scientists have developed ways to group all living organisms
3. Classification keys, and how to use and make them
4. The features of trees in our school grounds and how to use these to create a classification key
5. The life of scientist Carl Linnaeus

Science Skills that we will develop:

Explaining Science

- I use complex science words correctly

Classification

- I construct spider keys and use number keys
- I group and sub-group by fine observations

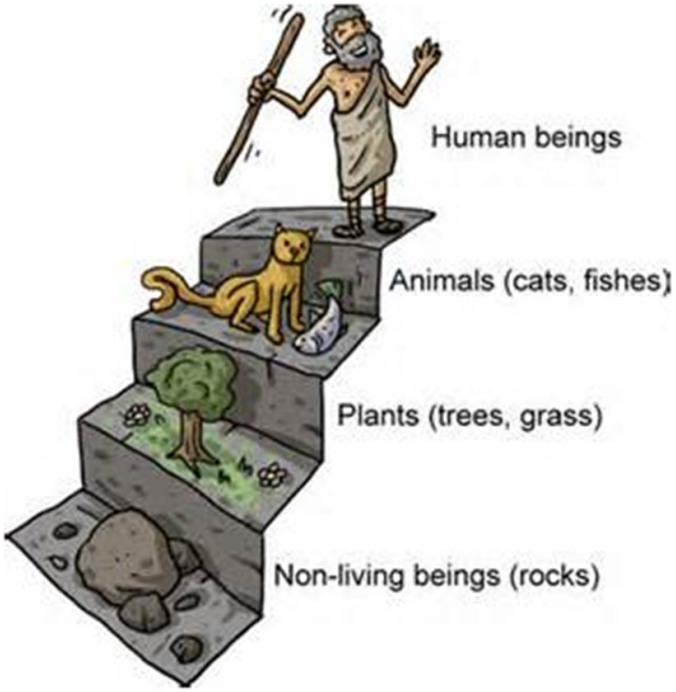
Review our understanding of classification and Aristotle's Ladder

Recap our knowledge of the five Kingdoms

Learn about how Carl Linnaeus developed the modern structure of classification

Research the classification of at least one animal in detail

Can you tell a partner about Aristotle's **'Ladder of Nature'** that we learnt about in the last lesson?



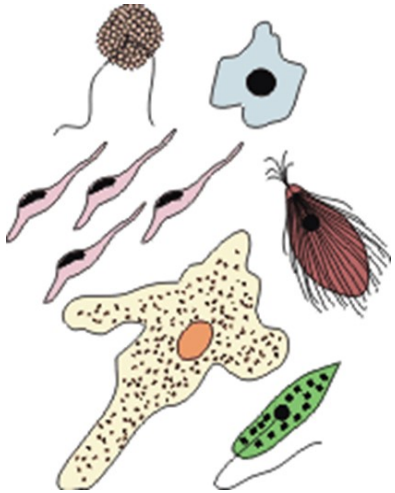
A quick re-cap...

Aristotle had a bright idea and sorted everything onto a ladder of importance.

He then decided that the animals and plants belonged in their own 'kingdoms'

We now use 5 Kingdoms:

Protoctista Kingdom - single-cell organisms with a nucleus. Pond algae is a Protoctista

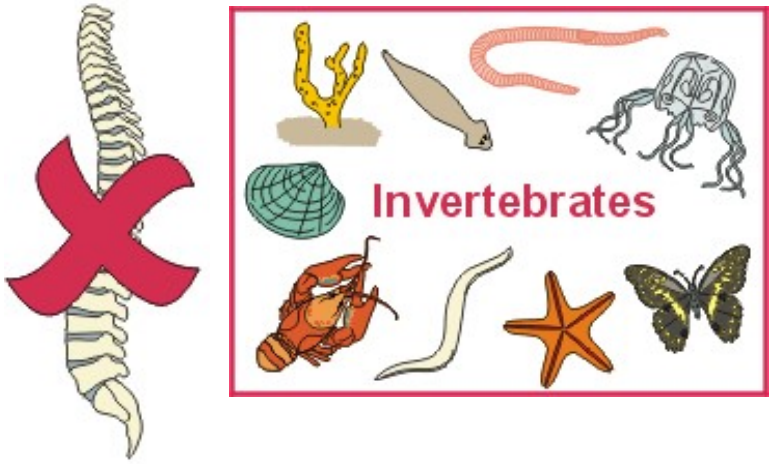


Monera Kingdom - bacteria, which have no nucleus; they divide to reproduce and can live almost anywhere.

Fungi Kingdom - not classed as plants, as they do not make their own food, living off decaying plants instead. About 70,000 known fungi.

Animalia Kingdom - so many different types, that they are split into two main groups:

Invertebrates - those without backbones.



Vertebrates - those with a backbone

Plantae Kingdom - so many different types that these also have been split into two main groups:

Flowering Plants -
reproduce by seeds

Non-flowering plants -
reproduce by spores

Fern

Now you have explored the five Kingdoms, try these games to see how much you have learnt.

Either use the ipads and search 'oum animal id games', or play as a class:

However, right up until the 17th century (for about 2000 years), scientist *still* used Aristotle's ideas about classification: living things were separated into two main kingdoms and everything was given a scientific name based on a description written in Latin.

The trouble was, the Latin names tended to be ridiculously long and difficult to remember. So every time a new kind of plant or animal was discovered, scientists had to remember yet another long and complicated name.

For example, the tomato plant was called

Solanum caule inermi herbaceo, foliis pinnatis incisis, racemis simplicibus,

which means 'smooth-stemmed herbaceous plant of the Solanum family, with cut, feathered leaves and fruit in simple clusters.'

Finally in 1737, another scientist, called Carl Linnaeus, had a couple of brilliant ideas.

Firstly, he added a third kingdom to the classification system - the **fungi** (including mushrooms and toadstools), which neither move like animals, nor produce food by photosynthesis like plants do.

Two more kingdoms were added after microscopes were invented (which ones do you think they were?).

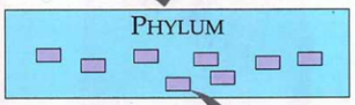
He also decided that each kingdom should have five levels, although now we use **seven levels**.

An example:

5 kingdoms

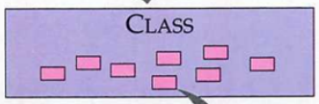
Animalia (animals)

8 phyla in the Animal kingdom



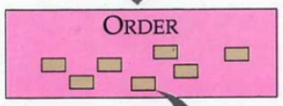
Chordata (those with a spinal chord)

8 classes in the Chordata phylum



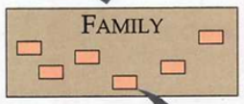
Mammalia (mammals - animals with fur or hair that feed their young with milk)

7 orders in the Mammalia class



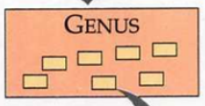
Carnivora (carnivores - meat eaters)

6 families in the Carnivora order

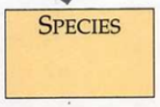


Felidae (the cat family)

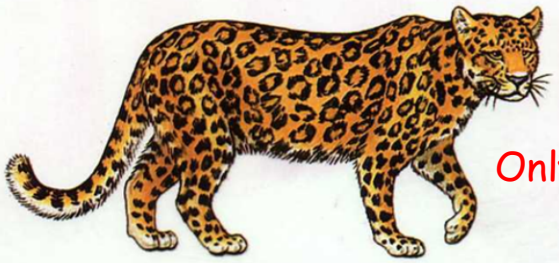
7 genera in the Felidae family



Panthera (panthers)



pardus (leopard)



Only **one** species of leopard

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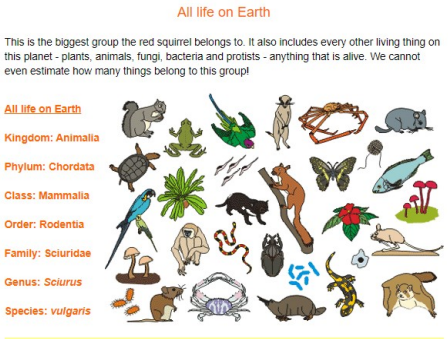
This video helps to explain the Linnaean classification system:

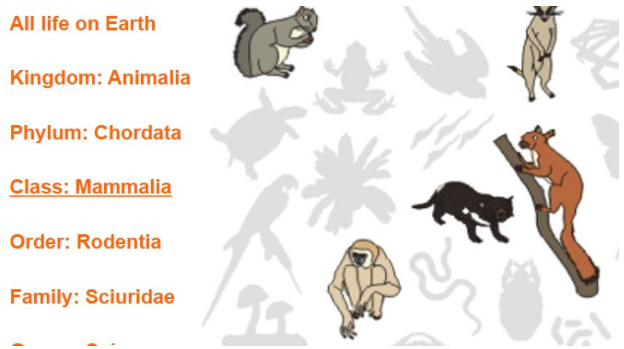
Classification of Living Things

This link helps to show how the red squirrel is classified by the same system:



So, because cats, lar gibbons, meerkats - and also humans - are mammals, we all share three levels of classification with the red squirrel:

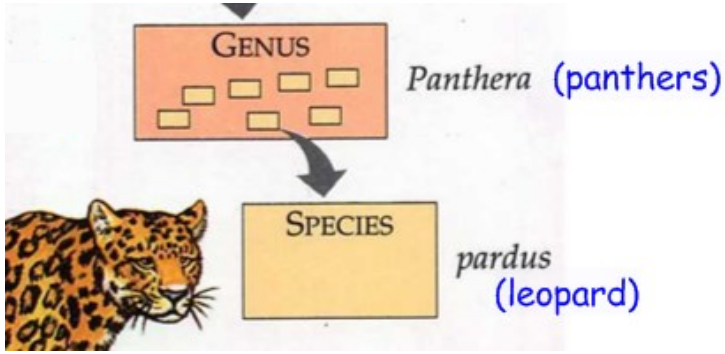
we are all in the Kingdom Animalia, the Phylum Chordata (backbones) and all belong in the Class Mammalia (with fur/hair & produce milk for our young).



The second thing that Carl Linnaeus did, was to re-name living things using his new groups, giving them just two Latin names, using the last two groups in his system - the **genus** and the **species**.

This is called the binomial system.

two name



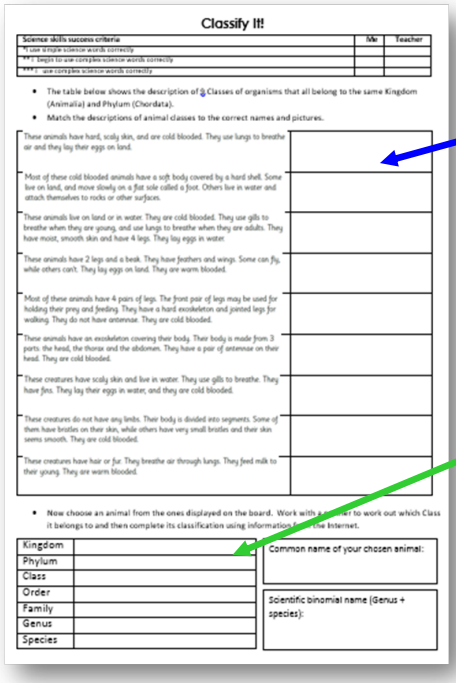
What do you think the leopard is known as by scientists?

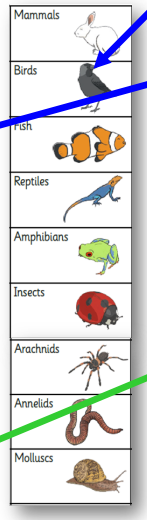
Yes - the leopard would only be known as *Panthera pardus.* The tomato plant was re-named *Lycopersicon esculentum.*

Other scientists quickly realised that Linnaeus was a genius and were extremely relieved that they could forget about all the silly names that had previously been used. It was now a lot easier to name new types of animals and plants when they were discovered.

Science skills success criteria: Classification	**Me**	**Teacher**
*I use simple science words correctly		
** I **begin** to use **complex** science words correctly		
*** I use **complex** science words **confidently**		

Use the worksheet to look at the descriptions of nine different Animalia Classes and match them to the correct pictures; cut and stick them to the sheet.





Then choose one animal from those shown on the next screen and work out which **Class** it belongs to.

Then use the Internet to help you find the **complete classification** (use the full names shown), and record them on the sheet.

You can research more than one animal - just record extra classifications in your Science Book.

Golden Jackal

Australian Freshwater Limpet

European Robin

Goldfish

Central Bearded Dragon

Honey Bee

Northern Crested Newt

Once you have completed the full classification for your chosen animal, write a short paragraph explaining how it is classified and what features are used to place it into each category. You might need to use the Wikipedia page to help, and try to use a range of conjunctions to link your ideas.

For example, a paragraph for the Leopard (Panthera pardus) might look like this:

Leopards, like all animals, belong to the Kingdom Animalia, because they move, eat, breathe, reproduce and can react to their surroundings. Since they possess a backbone with a spinal chord, they belong in the Phylum Chordata. Having fur and producing milk for their young, places leopards in the Class Mammalia, and being meat-eaters means they are in the Order Carnivora. Along with lions, tigers and other cats, they form the Family Felidae, but because they can roar, they have been grouped into the Genus Panthera. The name of a leopard is pardus, so the binomial name is Panthera pardus.