

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



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

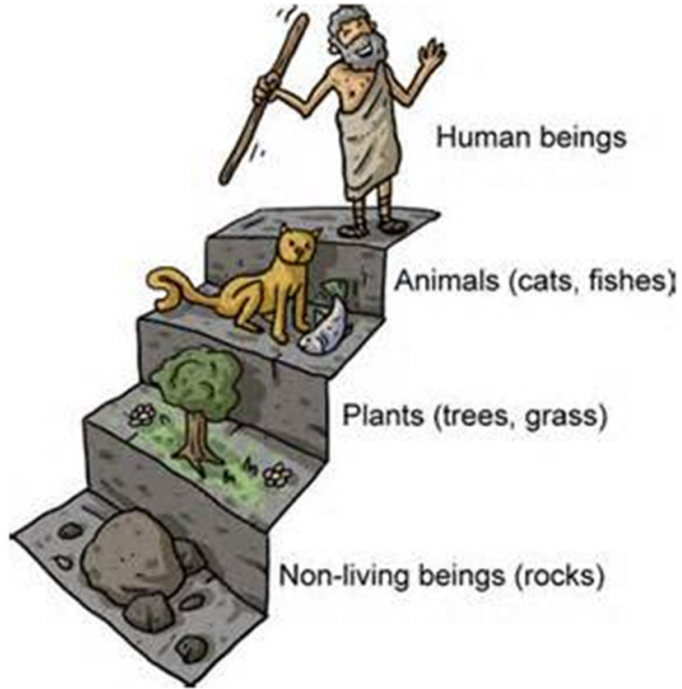


Learn about how Carl Linnaeus developed the modern structure of classification



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...

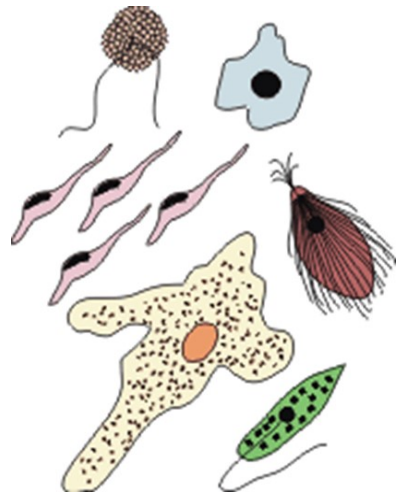
Aristotle had a bright idea and sorted everything onto a ladder of importance.

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

We now use 5 Kingdoms:



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



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

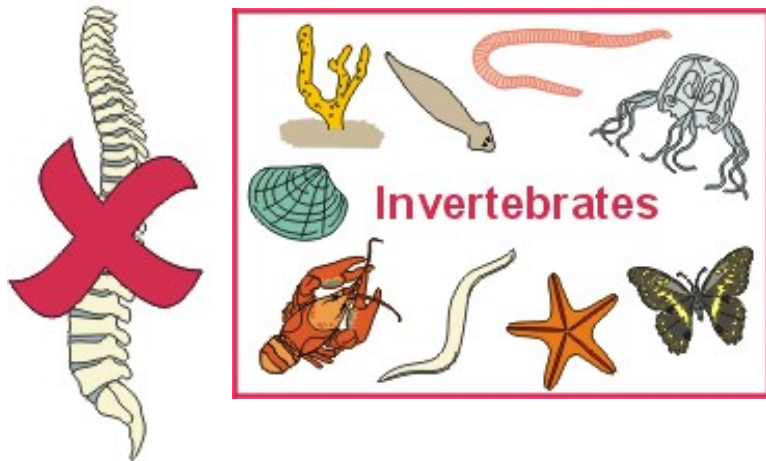


Fungi Kingdom - not classed as plants, as they do not make their own food, living off decaying plants instead. About 70,000 known fungi.



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.

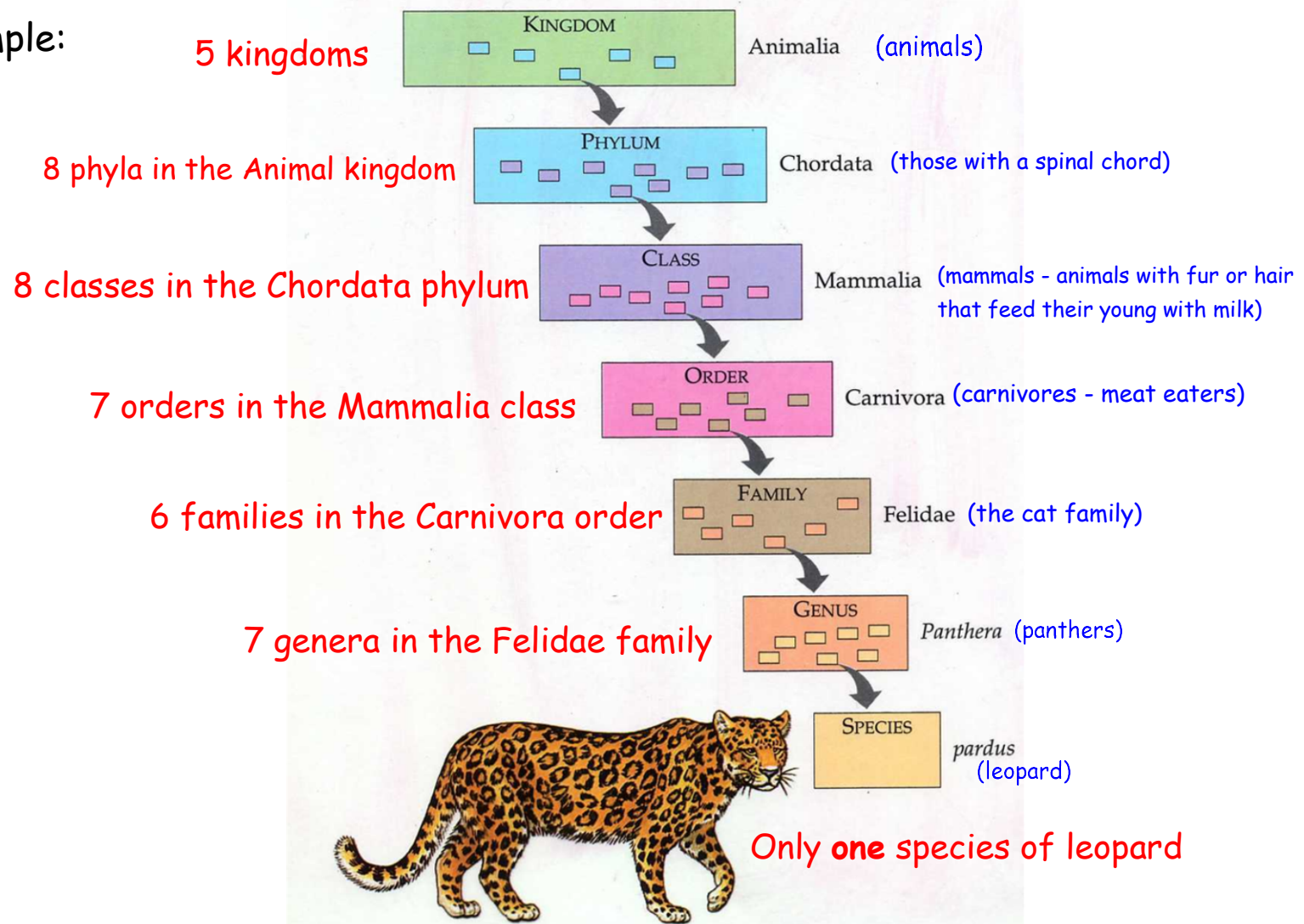
Firstly, he added a third kingdom to the classification system - the **fungi** (including mushrooms and toadstools), which neither move like animals, nor produce food by photosynthesis like plants do.



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:



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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).

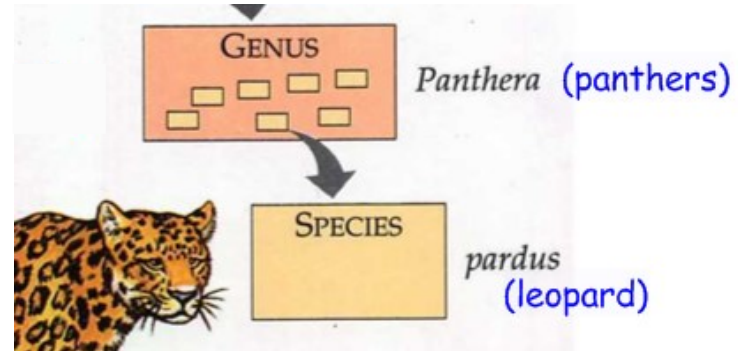
All life on Earth
Kingdom: Animalia
Phylum: Chordata
Class: Mammalia
Order: Rodentia
Family: Sciuridae



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.

Classify It!

Science skills success criteria	Mr	Teacher
Write words correctly		
Use words correctly		
Use words correctly		

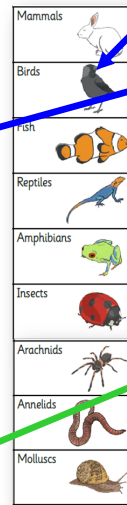
• The table below shows the description of 9 Classes of organisms that all belong to the same Kingdom (Animalia) and Phylum (Chordata).

• Match the descriptions of animal classes to the correct names and pictures.

These animals have hard, scaly skin, and are cold blooded. They use lungs to breathe air and they lay their eggs on land.	
Most of these cold blooded animals have a soft body covered by a hard shell. Some live on land, and move slowly on a flat sole called a foot. Others live in water and attach themselves to rocks or other surfaces.	
These animals live on land or in water. They are cold blooded. They use gills to breathe when they are young, and use lungs to breathe when they are adults. They have moist, smooth skin and have 4 legs. They lay eggs in water.	
These animals have 2 legs and a beak. They have feathers and wings. Some can fly, while others can't. They lay eggs on land. They are warm blooded.	
Most of these animals have 4 pairs of legs. The front pair of legs may be used for holding their prey and feeding. They have a hard exoskeleton and jointed legs for walking. They do not have antennae. They are cold blooded.	
These animals have an exoskeleton covering their body. Their body is made from 3 parts: the head, the thorax and the abdomen. They have a pair of antennae on their head. They are cold blooded.	
These creatures have scaly skin and live in water. They use gills to breathe. They have fins. They lay their eggs in water, and they are cold blooded.	
These creatures do not have any limbs. Their body is divided into segments. Some of them have bristles on their skin, while others have very small bristles and their skin seems smooth. They are cold blooded.	
These creatures have hair or fur. They breathe air through lungs. They feed milk to their young. They are warm blooded.	

• Now choose an animal from the ones displayed on the board. Work with a partner to work out which Class it belongs to and then complete its classification using information from the Internet.

Kingdom	Common name of your chosen animal:
Phylum	
Class	Scientific binomial name (Genus + species):
Order	
Family	
Genus	
Species	



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*.