All living things share the characteristics described in MRS C GREN

Biology is the study of living things. A **living object** is an object that carries out life functions. A **non-living object** is an object that has not been alive. A **dead object** is an object that was once alive.
All living organisms are composed of one or more cells. A cell is a small, living unit that contains all the chemicals and molecules that help support an organism's life.

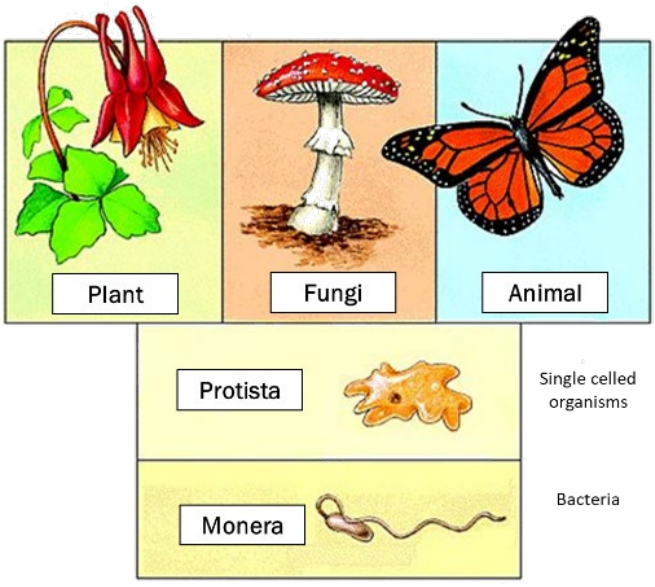
Classifying objects as living or non-living

How would we know if a **car** or **cow** is living? They both move and need "feeding" to keep them going. So why is only the cow living?

All living things share the characteristics described in MRS C GREN

We use the acronym MRS C GREN to remind us living objects show **ALL** of the life processes, not just some, and are made up of **CELLS.**

Life function	Gives us the ability to….
Movement	Move through space
Respiration	Obtain energy through reactions in cells
Sensitivity	Respond to the outside environment
Cells	Smallest unit of life – makes up the bodies of bigger organisms
Growth	Increase in size
Reproduction	Create more living things
Excretion	Dispose of waste chemicals
Nutrition	Extract useful chemicals from the environment



Living things are classified into groups based on similarities / features

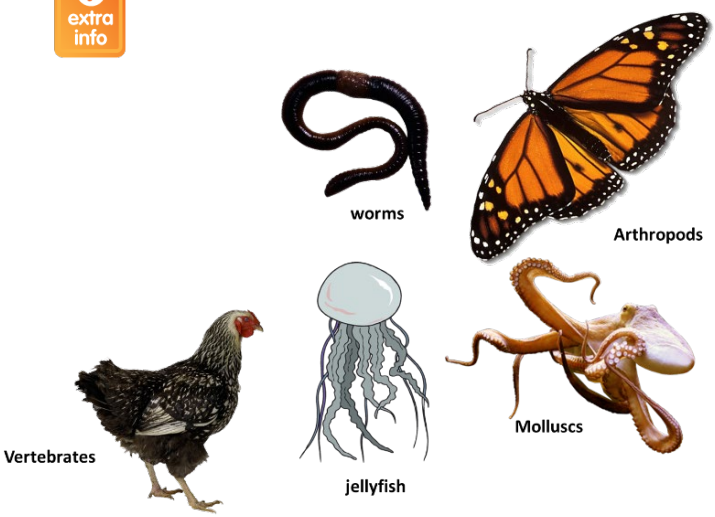
Biologists classify all living things into overall groups, called **Kingdoms**. The members of each kingdom are alike in key ways, such as the nature of their cells, their body features or the way they obtain energy. Classification keys are used to identify living things (and other objects) in each group.

The main groups that living things are classified into; Bacteria (Monera), Protista, Animals, Plants, Fungi

Traditional classification of organisms into five kingdoms is based on differences in body structure

Vertebrates and Invertebrates

The **Kingdoms** have been broken down into smaller groups called **Phylum**. Most of the groups are **invertebrates** – they have no internal spine or backbone and they include the sponges, Jellyfish, worms, molluscs, Arthropods (Insects/spiders/crustaceans). One group is the **Vertebrates** (all animals with backbones) which we are part of.

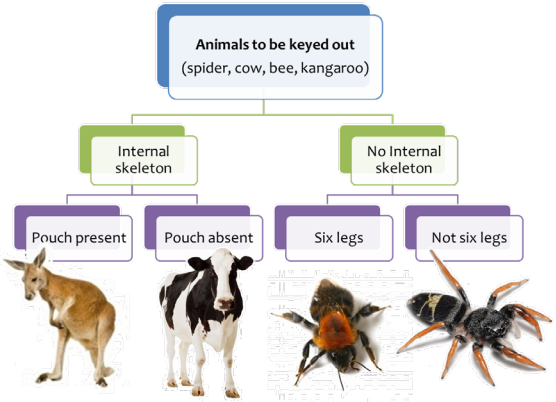


What is a dichotomous identification key?

The Dichotomous keys are used as tools to help identify unknown organisms using careful observations and matching those observations in an organised manner against choices given at each step. Each two choices are known as a **couplet**. **Dichotomous** means branched.

Rules for Using Dichotomous Keys:

1. Read both choices in a couplet (pair) carefully.
2. When reading a couplet, make sure you understand all of the terms used.
3. If you are unsure of which choice to make in a couplet, follow both forks (one at a time). After working through a couple of more couplets, it may become apparent that one fork does not fit your sample at all.
4. Work with more than one sample if possible. This will allow you to compare.
5. When a measurement is given make sure that you take the measurement and do not take a guess.



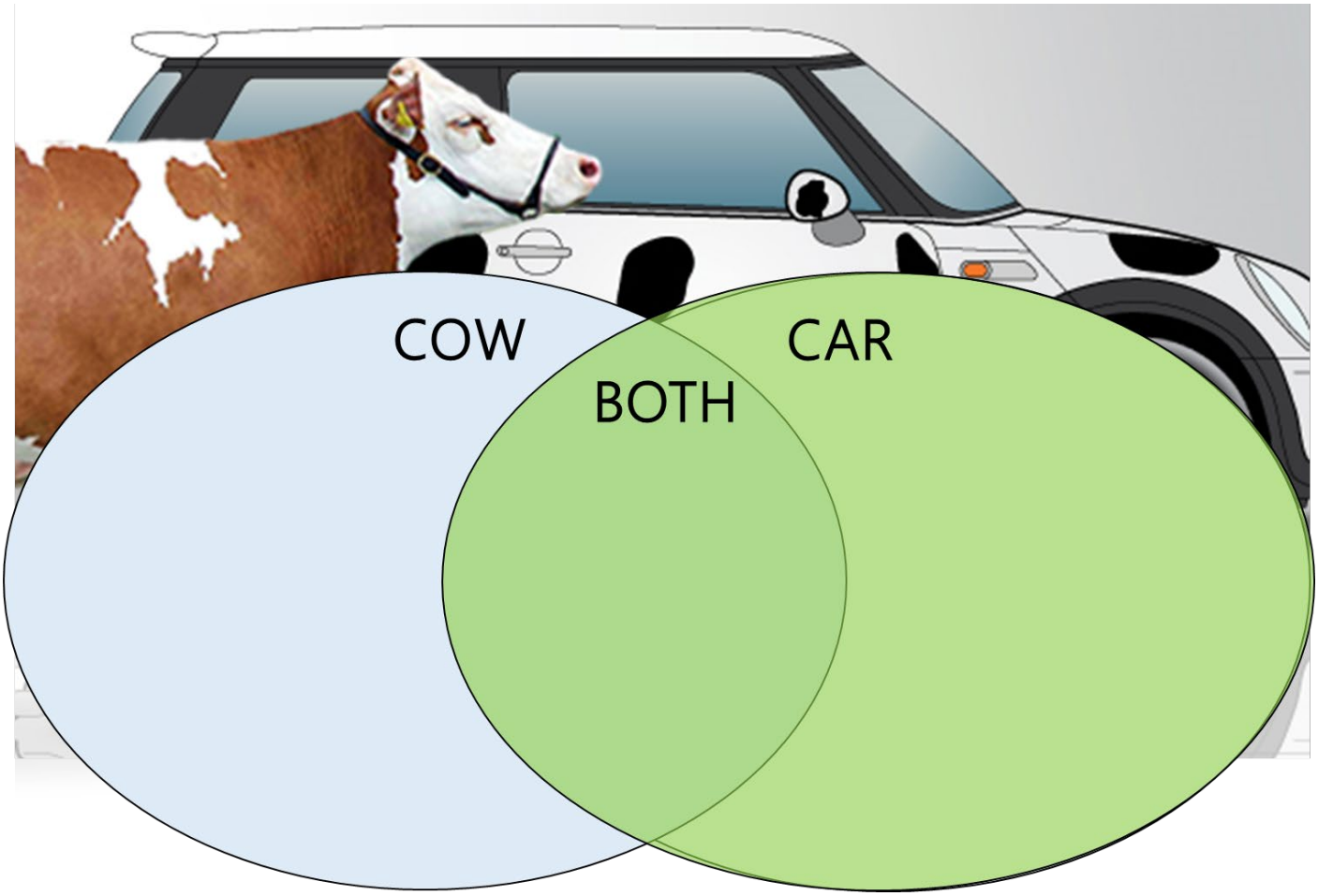
Making a simple dichotomous identification key.

If we are making a key based on observations of physical features that we can see, the first step must be a feature that can divide all of the living organisms into two groups.

For example, we could divide the birds into those that have tuffs of feathers on their heads (spotted shag and crested penguin) and those that do not (wax-eye, brown kiwi, paradise duck, kingfisher, yellow head, spotted dotterel). Other features such as thickness of beak, tail or not, one colour or many colours – can be used to further divide each bird group.

The key is finished when each individual has its own path and the key leads to a name for each.

1.a Write down any **processes** that allow both the car and cow to function / live – in the centre write down any that they share i.e. both need fuel/food to function



1b. Life processes can be remembered by the first letters in MRS C GREN. Complete the chart below

M	
R	
S	
C	Cells
G	
R	
E	
N	

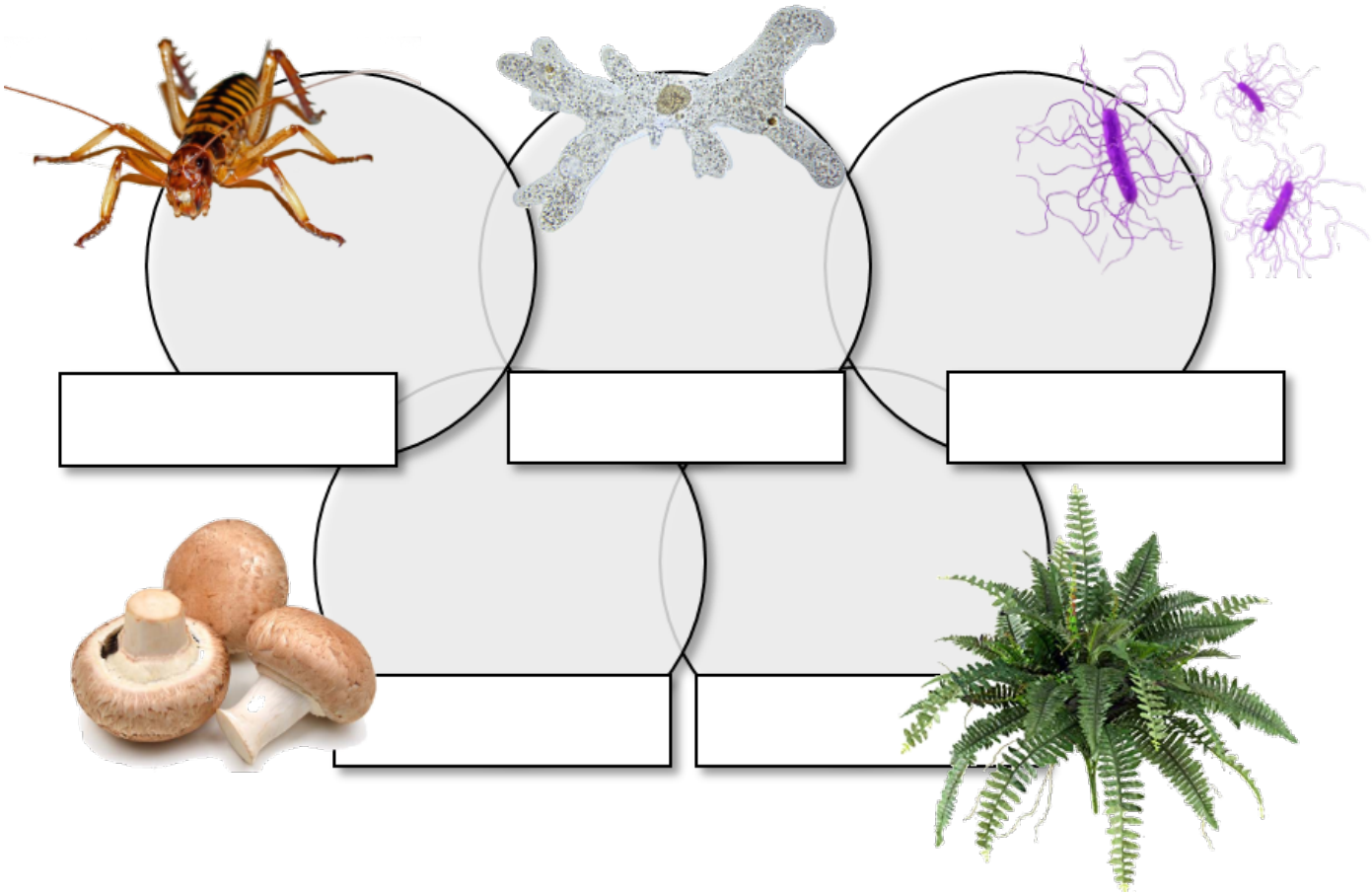
1c. Use the information above to explain why a cow is considered living but a car is not.

_____

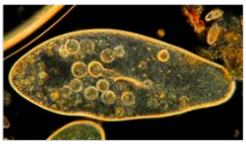
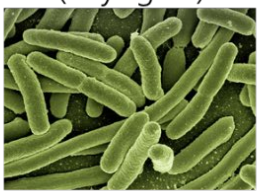
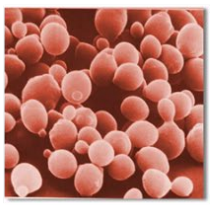
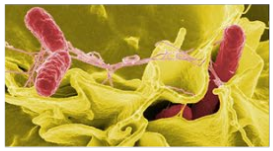
_____

_____

2a. Add the names of the **FIVE kingdoms** that all living organisms are divided into. An example is given for each one (see previous notes if you need more clues!)



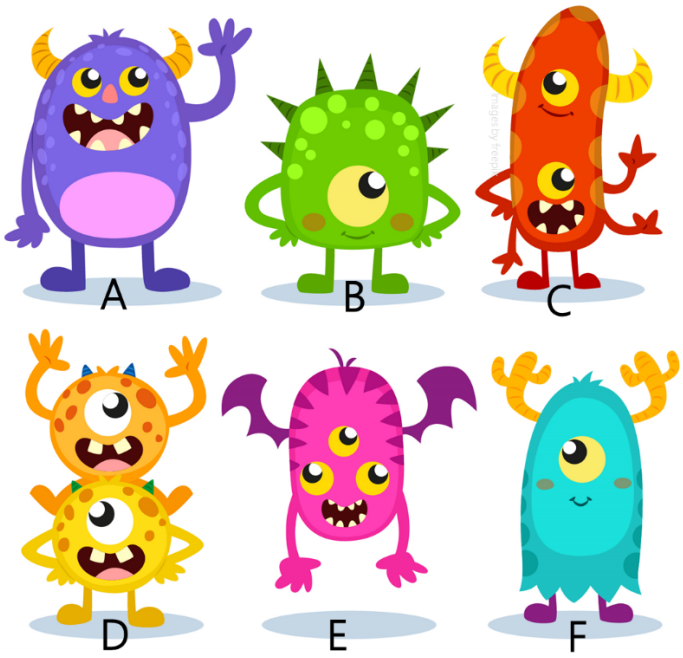
2b. Sort the following organisms into their Kingdoms by adding their names to the appropriate circle above

paramecium 	fish 	acidophilus (in yogurt) 	kelp 
jellyfish 	coral 	mould 	cactus 
daffodil 	moss 	yeast 	salmonella (in chicken) 

3. Six new aliens have been found on Mars. Use the dichotomous key to write the aliens names under each.

1. Does the alien have 2 eyes?	Yes	go to question 2
	No	go to question 3
2. Does the alien have hairy arms?	Yes	*Scaredicus yowlii*
	No	go to question 4
3. Does the alien have one eye?	Yes	go to question 5
	No	*Tricops bearii*
4. Does the alien have eyebrows?	Yes	*Suprus worrius*
	No	*Suprus uptightus*
5. Does the alien have one tuft of hair on its head?	Yes	*Cyclops monotufus*
	No	*Cyclops happius*

4. Make your own key to name and identify the following monsters – test it on another student



A
B
C
D
E
F