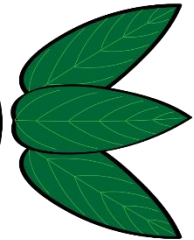
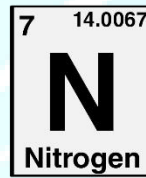
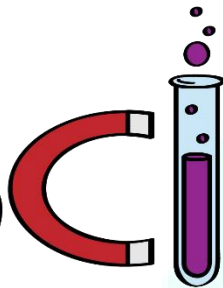
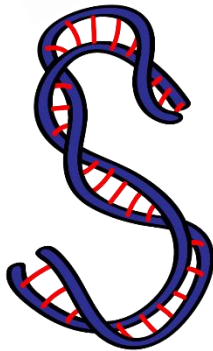




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INTERNATIONAL SCHOOL



Science Department

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Year 7

Term 1, Revision Pack (Unit 4)

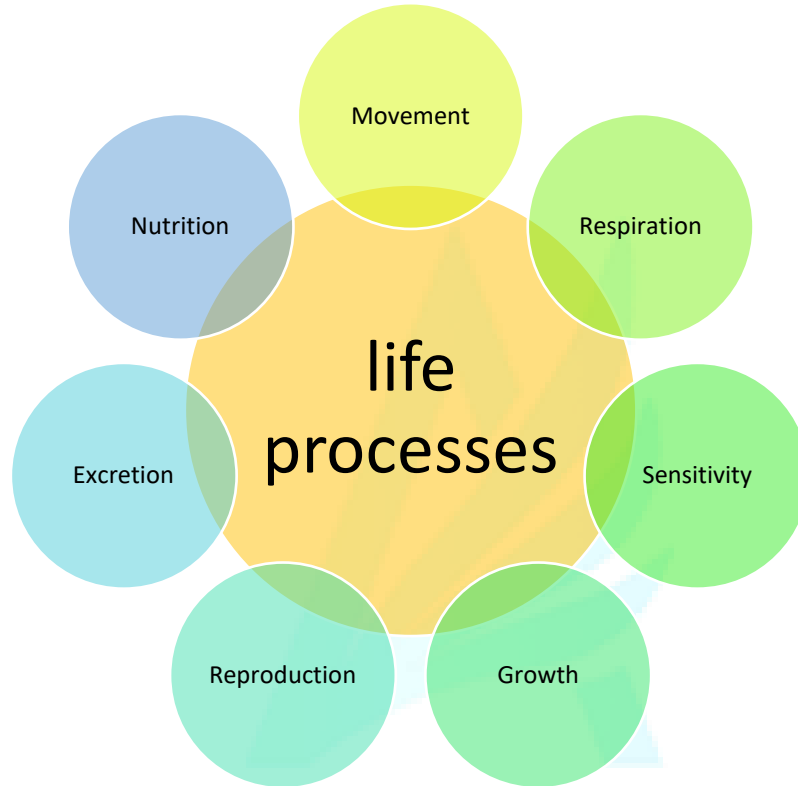
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## 4.1 Life processes



To state that anything is a living thing, you must ensure they perform all of the 7-life processes.

To remember them, use **MRS GREN**:

### Characteristics of living things

**M**ovement

**R**espiration

**S**ensitivity

**G**rowth

**R**eproduction

**E**xcretion

**N**utrition

**MRS GREN**



To stay alive any living thing needs to perform:

- 1- Movement: All living things move to search for food or escape from danger (plants also have their way of movement)
- 2- Respiration: breathing or gas exchanges including energy production.
- 3- Sensitivity: Responding to stimuli.  
Example: pulling hand when touching a hot cup (the hot cup is the stimuli – pulling the hand is the response or reaction)  
Stimuli could be any change in the surroundings like the smell of food, seeing a lion or feeling cold, .....
- 4- Growth: increasing in size, height, mass, length
- 5- Reproduction: producing new members of the same kind
- 6- Excretion: getting rid of the wastes from the body
- 7- Nutrition: depending on food & water to produce energy

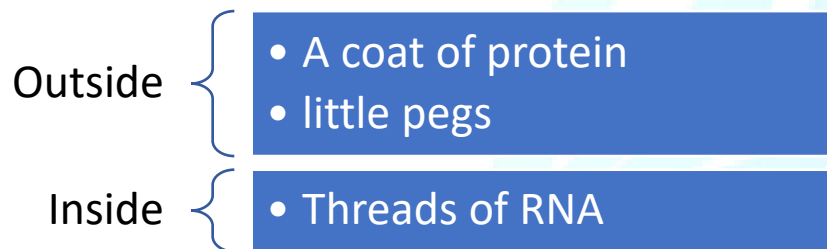
**Remember**: Some non-living things may do some of these activities but this doesn't mean that they are living, as they do only some, not all life processes.

The car can move and has sensors but it doesn't do all life processes, so it's not a living thing.

## 4.2 Viruses

What is a virus?

- A very small thing (smaller than the cell)
- We use an electron microscope to see it (we can't see it by our eyes or light microscopes).
- Viruses are not made of cells. They do not have a cell membrane or cytoplasm.
- A virus consists of:



Note: RNA contains a set of coded instructions for making more viruses.

### How viruses replicate

Viruses cannot do anything at all on their own. They do not respire, feed, excrete or grow. They are not sensitive and cannot move. Viruses have to get inside a living cell before they can make copies of themselves.

- 1- A virus can invade (get inside) cells of birds, humans and other mammals. The viruses get into your body by going up your nose when you breathe in.
- 2- The little pegs on the virus's coat help it to stick onto one of your cells and then get inside the cell.
- 3- When the viruses are inside the cell, each virus bursts open. The virus forces the cell to copy the instructions on its RNA and make many new viruses. This is called replication. This kills the cell.
- 4- Then the new viruses burst out of the dying cell, ready to infect more cells. This makes the animal whose cells are infected feel ill.

### 4.3 What is a species?

It is a group of living things of the same kind that can reproduce fertile offspring (children).

- All the organisms in a species share the same characteristics but **they are not all identical** to each other, they are only **similar**.
- There is **variation** between the individuals of the same species.

If the offspring are fertile. This means they can also produce offspring. Organisms that belong to different species cannot usually reproduce with one another.

Very rarely, two organisms from different species do reproduce together. This sometimes happens in a zoo. It can happen if two animals from different species are put into the same enclosure.

For example, a male lion and a female tiger in a zoo sometimes reproduce together. The young animals that are produced are called ligers. Ligers are healthy animals. But ligers cannot reproduce. They cannot have offspring. They are **infertile**.

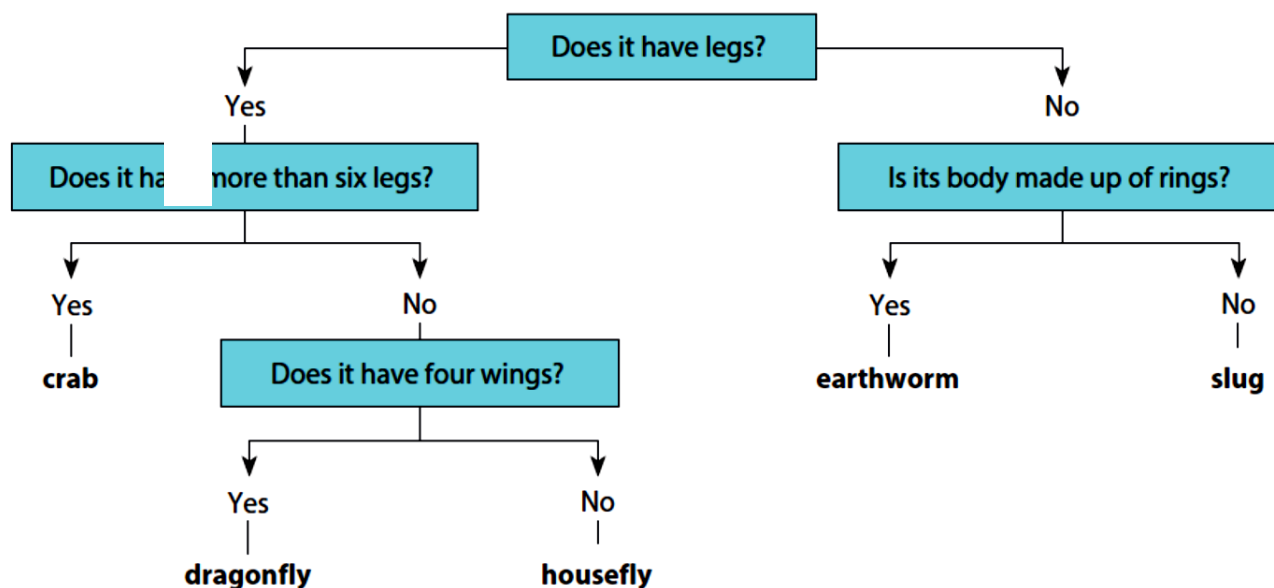
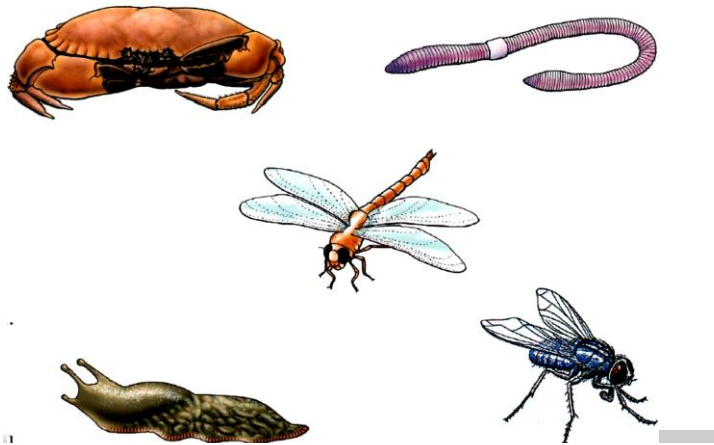
So, we can describe a species as a group of organisms that can reproduce together to produce fertile offspring.



A male lion (left) can breed with a female tiger (centre) to produce a liger (right).

## 4.4 Using keys

- Biologists use keys to help them to identify organisms.
- A key is a set of questions about the organism you want to identify. The answer to each question takes you to another question. You work through all of the questions until you arrive at the name of the organism.
- Here is a simple key to help someone identify an organism. It is a dichotomous key. Dichotomous means 'branching into two'.



Keys are sometimes arranged differently. Here is the same key set out in a different way. Instead of a question, the key starts with a pair of statements to choose from.

- 1 **a** It has legs. \_\_\_\_\_ → go to 2
- b** It does not have legs. \_\_\_\_\_ → go to 3
- 2 **a** It has exactly six legs. \_\_\_\_\_ → go to 4
- b** It has more than six legs. \_\_\_\_\_ → **crab**
- 3 **a** Its body is made up of rings. \_\_\_\_\_ → **earthworm**
- b** Its body is not made up of rings. \_\_\_\_\_ → **slug**
- 4 **a** It has four wings. \_\_\_\_\_ → **dragonfly**
- b** It has two wings. \_\_\_\_\_ → **housefly**

### 4.5 Constructing keys

#### Step 1

Think of a way you can split the learners into two groups. For example, you could split them into male and female learners. So, your first question could be: Is the learner female?

#### Step 2

Now look at just one of these groups – the female learners, for example. Think of a way to split these into two. For example, you could use the colour of their hair.

#### Step 3

Repeat Step 2 until you have thought of ways to identify each learner in turn.

