



Living and Non-living Things



Living Things

- We are surrounded by living and non-living things. All animals and plants are living things and biology is the study of these living things. A cat playing with a ball is obviously living. A pigeon flying from tree to tree is also a living thing.
- Sometimes it is not so easy to decide. Plants are living things but they do not play with balls or fly.



- To be classified as living, an organism must be able to carry out the following seven activities:

M : Movement

R : Respiration (chemical process in cell which releases energy)

S: Sensitivity (sensing the environment)

G: Growth

R: Reproduction

E: Excretion (removal of waste products)

N: Nutrition (taking in nutrients / food)



- To decide if something is living or non-living, run into each of the seven criteria. If the answer is no to any of them, then the object is non-living .
- For fire:

M : Movement	yes	
R : Respiration	no	(uses oxigen and releases carbon dioxide, but obiouly is not occurring in cell)
S: Sensitivity	yes/no	(can respond to wind/water, etc)
G: Growth	yes	
R: Reproduction	yes	(a spark from one fire will cause another fire to start)
E: Excretion	yes	(the smoke)
N: Nutrition	yes	(the woods, paper, etc that it burns)



- As the answer was no to respiration, fire is non-living, even it carries out all the other activities.

Non-living things

- Sand, wood and glass are all non-living things. None of them shows any of the characteristics listed above.
- Non-living things can be divided into two groups.
- First, come **THOSE WHICH WERE NEVER PART OF A LIVING THING**, such as stone and gold.
- The second group are **THOSE WHICH WERE ONCE PART OF LIVING THINGS**. Coal



is a good example. It was formed when trees died and sank into the soft ground. This happened many millions of years ago when the Earth was covered with forests. Paper is non-living but it is also made from trees. Jam is also non-living but it was made from the fruit of a plant.

The Seven Characteristics of Living Things

- *Movement:*

All living organisms show movement of one kind or another. All living organisms have internal movement, which means that they have the ability of moving substances from one part of their body to another. Some living organisms show external movement as well - they can move from place to place by walking, flying or swimming.



- *Breathing or Respiration*

All living things exchange gases with their environment. Animals take in oxygen and breathe out carbon dioxide.



- *Sensitivity*

Living things react to changes around them. We react to touch, light, heat, cold and sound, as do other living things.



- *Growth*

When living things feed they gain energy. Some of this energy is used in growth. Living things become larger and more complicated as they grow.



- *Reproduction*

All living things produce young. Humans make babies, cats produce kittens and pigeons lay eggs. Plants also reproduce. Many make seeds which can germinate and grow into new plants.



- *Excretion*

Excretion is the removal of waste from the body. If this waste was allowed to remain in the body it could be poisonous. Humans produce a liquid waste called urine. We also excrete waste when we breathe out. All living things need to remove waste from their bodies.



- **Nutrition:**

All living organisms need to take substances from their environment to obtain energy, to grow and to stay healthy.

