



READ AND HILITE THE MAIN IDEAS IN EACH PASSAGE THEN ANSWER THE QUESTIONS.

Most people feel confident that they could identify a living thing from a nonliving thing, but sometimes it's not so easy. Scientists have argued for centuries over the basic characteristics that separate life from non-life. Some of these arguments are still unresolved. Despite these arguments, there do seem to be some generally accepted characteristics common to all living things. Anything that possesses all these characteristics of life is known as an organism.

1. CONTAIN ONE OR MORE CELLS

Scientists know that all living things are organized. The smallest unit of organization of a living thing is the cell. A cell is a collection of living matter enclosed by a barrier known as the plasma membrane that separates it from its surroundings. Cells can perform all the functions we associate with life.

Cells are organized and contain specialized parts that perform particular functions. Cells are very different from each other. A single cell by itself can form an entire living organism. Organisms consisting of only a single cell are called unicellular. A bacterium or a protist like amoebas and paramecia are unicellular. However, most of the organisms you are familiar with, such as dogs and trees, are multicellular. Multicellular organisms contain hundreds, thousands, even trillions of cells or more. Multicellular organisms may have their cells organized into tissues, organs, and systems. Whether it is unicellular or multicellular, all structures and functions of an organism come together to form an orderly living system.

2. REPRODUCTION

Perhaps the most obvious of all the characteristics of life is reproduction, the production of offspring. Organisms don't live forever. For life to continue, organisms must replace themselves. Reproduction is not essential for the survival of an individual organism. However, it is essential for the continuation of an organism's species. A species is a group of similar-looking organisms that can interbreed and produce fertile offspring. If individuals in a species never reproduced, it would mean an end to that species' existence on Earth.

There are two basic kinds of reproduction: sexual and asexual. Sexual reproduction requires that two cells (sperm and egg) unite to produce the first cell of the new organism. Organisms reproducing sexually do not always have "sex!" In many cases sperm and egg are released into the water where they meet. Most familiar organisms - from maple trees to birds and bees - reproduce sexually. In asexual reproduction, a single organism can reproduce without the aid of another. Sometimes these organisms can just divide themselves in two!

3. GROWTH AND DEVELOPMENT

Adults don't always look like the babies of a species. All organisms begin their lives as single cells. Over time, these organisms grow and take on the characteristics of their species. Growth results in an increase in the amount of living material and the formation of new structures.

All organisms grow, and different parts of organisms may grow at different rates. Organisms made up of only one cell may change little during their lives, but they do

grow. On the other hand, organisms made up of numerous cells go through many changes during their lifetimes.

4. OBTAIN AND USE ENERGY

Energy is the ability to make things change. Energy is important because it powers life processes. It provides organisms with the ability to maintain balance, grow, reproduce, and carry out other life functions. Some organisms obtain energy from the foods they eat or, in the case of plants and several other types of organisms, the foods that they produce. Organisms that get energy from the food they eat are called heterotrophs. Organisms that use energy from the sun to make their own food (which they then use for energy) are called autotrophs. The process is called photosynthesis.

5. RESPOND TO THE ENVIRONMENT / MAINTAIN HOMEOSTASIS

Living things live in a constant connection with the environment, which includes the air, water, weather, temperature, any organisms in the area, and many other factors. These external environmental factors act as stimuli and can cause a response from living things. Organisms need to respond to the changes in order to stay alive and healthy. An organism must respond to changes in the internal environment as well. Internal conditions include the level of water, nutrients, and minerals inside the body. It also refers to body temperature and hormone levels. Adjustments to internal changes help organisms maintain a stable internal environment. The regulation of an organism's internal environment to maintain conditions suitable for life is called homeostasis.

1. What is the simplest level at which life may exist?
2. What is the difference between unicellular and multicellular organisms?
3. Define reproduction.
4. Name and define the two basic kinds of reproduction.
5. How do all organisms begin life?
6. Define energy.
7. Why is energy important to a living organism?
8. Describe homeostasis.
9. What are some environmental factors (stimuli) that organisms respond to?
10. What are two internal factors that organisms respond to?

| Feature of Life | Dog | Fast-moving stream |
|----------------------------------|------------|---------------------------|
| made of cells? | | |
| uses energy? | | |
| responds and adjusts to changes? | | |
| reproduces? | | |
| grows and develops? | | |

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