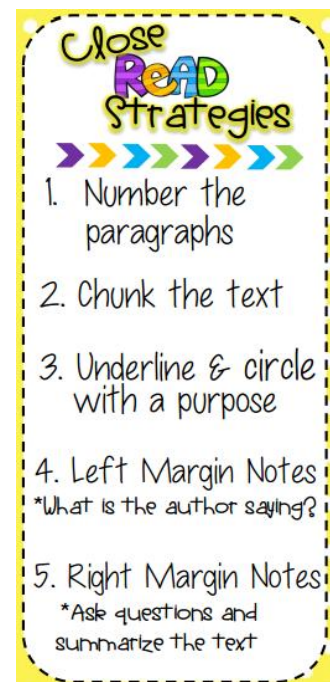


Close Read Activity-for After Card Sort

Directions

Students will do the card sort document first and then categorize what you already know. No talking during this first step. Remember, it is not about being right or wrong, it was about what you are learning. Use the Close Read Strategies Bookmark on the right to do the close read below.

We will go back to the card sort later to re-categorize the items in a different color so that they can see what we have learned.



Characteristics of Life on Earth

What Is Life?

It's not too difficult to tell that somethings are alive. Dogs chasing tennis balls are alive. Birds chattering in a tree are alive. Fish swimming around the plants in an aquarium are alive. In fact, animals are the first things we learn to recognize as living.

Things that are alive, like the animals described above, are called organisms. Any living thing is an organism. But not all organisms are animals. In the photos to the right, the fruiting tree is alive, and the plants in the aquarium are alive.

It's not always easy to tell that plants are alive because they don't move around, breathe, eat, or make sounds. Even so, they are alive, and there are ways to figure out that they are living things.

Living, Dead, and Nonliving

One way to look at the question What is life? Is to think about what makes life come to an end. Every living organism dies after a period of time. An organism is dead when it is no longer alive. A fish out of water will die after a short period of time. The fish is still there, it is still made out of the same materials, and it still looks the same as it did when it was living in the water, but it is no longer alive. And this is important – something can be dead only if it once lived. A rock can never be dead because a rock was never alive. We describe a rock as nonliving.

Living organisms can be described in terms of two sets of characteristics. One is the needs or requirements that all organisms have to satisfy to stay alive. The second is the functions that all organisms perform.

What Do Living Organisms Need?

What do you need to stay alive? It has been said that a person can live about 3 minutes without air, about 3 days without water, and about 3 weeks without food. People need air, water, and food to stay alive.

You breathe air to stay alive. When you breathe in, you bring oxygen into your lungs, where it dissolves into your blood. When you breathe out, carbon dioxide, carbon monoxide, and other waste gases leave your body and go into the air. The process of moving gases into and out of your body is called gas exchange. Birds do it, bees do it, lizards, fish, baboons, stink bugs, and even trees do it. All living organisms engage in gas exchange, and the most common gases exchanged are oxygen and carbon dioxide.

You drink water to stay alive. Even if you don't actually drink pure water, there is water in the fruit, vegetables, soft drinks, milk, and everything else you eat and drink. Water is essential for life as we know it on Earth. It's just that simple: all living organisms need water.

You eat food to stay alive. Food provides energy. Energy is required to make things happen. You can't move, breathe, see, hear, think, or do anything else without energy. All living organisms use energy to live.

The process of living creates by-products that are of no use to the organism. In fact, many by-products are dangerous to the organism if they are allowed to build up. For this reason, organisms must get rid of waste products. These might be gases, liquids, or solids. All living organisms eliminate waste.

It is a universal truth that everything has to be somewhere. That somewhere for an organism is its environment. Every organism lives in an environment that is suitable to fulfill its needs. Organisms have adaptations that allow them to live in their environment, or habitat.

The ocean and lakes are suitable environments for fish which have adaptations such as gills and fins. The desert is a suitable environment for scorpions, the forest for maple trees, fresh water and moist soil for paramecia, and so on.

If the environment is not suitable, an organism will not survive. Some organisms form protective spores or capsules to survive unfavorable times. These spores do not appear to be living. They are dormant. But when suitable circumstances exist, they suddenly start to exhibit the characteristics of life. They were always living, but now you can tell.

Five basic needs are common to all living organisms. They are the need for *gas exchange*, the need for *water*, the need for *energy* (food), the need to *eliminate waste*, and the need for a *suitable environment*.

What Do Living Organisms Do?

Once an organism's basic needs are met, it gets on with the process of life. When things happen in the environment, organisms respond. All organisms respond to the environment.

The ocean fish swims away when the sea lion comes by, the scorpion scurries under a rock when the Sun heats up the ground, and the maple tree's leaves turn red and fall off in the autumn. These are all responses to the environment.

When organisms start life, they are small. As time passes, they get bigger. An increase in size is called growth. The chemical building blocks for growth come from food, water, and from the environment in the form of minerals. All organisms grow.

Organisms don't live forever. To ensure that the species (a kind of organism) survives, living organisms make new organisms of their kind. They reproduce. That's not to say every individual organism will reproduce, but every population of organisms reproduces to keep the species going.

All organisms do three things. They *respond to the environment*, they *grow*, and they *reproduce*. Anything that does not have the ability to do all three of these things is not an organism.

There is actually one more characteristic common to all living organisms. That characteristic is not discussed in this article, but will be introduced in the near future. Can you think of what that characteristic might be? It's true of you, it's true of turtles and beetles, it's true of elm trees and mosses, and it's true of all the tiny living organisms too small to see with the naked eye.

Sometimes it is difficult to decide if something is alive. A car driving down the road exchanges gases, and a washing machine needs water. A burning candle uses energy, and a fire gives off waste. A smoke alarm responds to the environment, clouds grow, and the US Mint produces new dollar bills all the time.

One characteristic, or even three or four, does not qualify an object to join the ranks of the living. In order to qualify as a living organism and object must meet all eight criteria.

Think Questions

1. What is an organism?

2. What are the basic needs of all living organisms?

3. What functions are performed by all living organisms?

4. Why do you think movement is not considered a characteristic of life?

5. Under what circumstances might a living organism not appear living?

6. What is the difference between living, nonliving, and dead?
