***Evolution Vocabulary***  – Student: \_\_\_\_\_\_\_\_\_\_\_\_

Earth is home to an estimated 8.7 million species of animals, with 6.5 million living in the land and 2.2 living in the oceans. This variety of organisms inhabiting the planet is called its **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

This number may seem like a huge lot, but an interesting thing to consider is that many of these species are **\_\_\_\_\_\_\_\_\_\_\_\_\_**.

Have you ever wondered how some organisms look similar, but still are completely different? There is a lot of evidence that species change over time. This gradual process of change that happens to a species over a long period of time is called **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**. This is the ability an organism has to use its characteristics to help it **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

Understanding evolution is understanding how living things have **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** over time to meet their **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

For instance, look at an eagle's talons. They are very long and strong when comparing to other birds. Why is this a necessity for the eagle? The long, strong talons and the bald legs are tools the eagle uses to survive easier in its **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

A behaviour or physical characteristic that allows an organism to survive and reproduce in its environment is called an **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**. Adaptations arise from **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, which are a result of a change in the DNA of an organism.

Imagine you had to write a certain phrase a thousand times; chances are you would make a couple of **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**. When the DNA of a cell makes a copy of itself, sometimes mistakes are made, and voila, mutation!

Let's say a moth has always been white. It had a difficult time **\_\_\_\_\_\_\_\_\_\_\_\_\_** because its colour was a **\_\_\_\_\_\_\_\_\_\_\_\_\_** to the trunks of the trees, and so birds could see it and eat it easily. A mutation happened, and one of the moths was born brown. Do you think this moth would be able to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** more than the other moths?

The answer is, most likely, **\_\_\_\_\_\_**. This mutation created an adaptation that enables the moth to **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** than other moths.

This would likely cause the white moth population to eventually become more **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** than the brown moths; eventually, there would be only brown moths, and the white moths would be gone.

This process is called **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, and it is what drives **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**. This is the natural process by which individuals that are **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** to their environment are more likely to survive and reproduce than others that are not.  Our brown moth, better adapted to its **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, would have a better chance of finding a **\_\_\_\_\_\_\_\_** and passing its brown genes to its **\_\_\_\_\_\_\_\_\_\_\_\_\_**.

This process of natural selection is also called "**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**," a concept that people were talking about a lot when the Huger Games became popular. The "fittest" organism survive to live a long life and reproduce. "Fit" doesn't mean being strong or buff, however; it means **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, or being well adapted to it.

That's right -- some adaptations survive exactly because they are**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, or a different colour, or more delicate (so they look like twigs). Some species developed the ability to move veeeeery slowly -- this may seem counterproductive, but it may make them almost **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** in their environment. When dealing with **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, invisibility is a good thing!

How about whales? Have you ever considered their blowhole, and how it is located in a great spot?

These modifications help a species survive in its environment. When the entire population of a species **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** in its environment -- either because the environment **\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, or food supplies **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, or they were hunted by predators -- we call that **\_\_\_\_\_\_\_\_\_\_\_\_\_\_**. Dinosaurs went extinct millions of years ago; in fact, 99% of all organisms that ever lived on Earth are now extinct.

Earth has gone through five major **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, all caused by a variety of geological factors; in fact, scientists warn us that we are currently undergoing a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, as observed by current data. Since 1970, **\_\_\_\_\_\_\_\_\_** of all vertebrate animal populations has been wiped out, with many species of animals becoming extinct. Every day, more species become extinct, some without ever being **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

Did you know that we have many things in common with a rhinoceros? We also have things in common with other animals. For instance, rhinos' front legs, dolphins' fins, bird wings, the human arm and a dog's front leg all have a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** structure, because they are all composed of a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, a **\_\_\_\_\_\_\_\_\_\_** and an **\_\_\_\_\_\_\_\_**. This indicates that all of us, a long, long time ago, had a **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, which branched off before we were divided into different families of animals. These structures which can be found in similar locations, but different species are called **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**.

**\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** is not the only way to evolve a species. In fact, did you know that **\_\_\_\_\_\_\_\_\_\_\_\_\_\_** also change species over time? In fact, most of the plants and animals we eat today are not found in the wild. Take the banana, for instance; in the wild, there are many different kinds of banana, all of them smaller and seedy. The bananas we eat are larger, sweeter and usually yellow, while in the wild the colours vary.

These **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** happened over a long period of time, through a process called artificial selection. This is different from natural selection because it is not based on whether the species will be more adaptable to the environment; rather, humans are now modifying the species based on certain characteristics they want to be passed on, such as size, flavour, etc.

On **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, humans choose a species to grow; they choose a characteristic they would like, such as size or texture, and plant a large quantity of the same plant. Then, they look for mutations, or single individuals that display a better flavour, or a bigger size. They then get this individual and breed several more of those, using them as parents for the next generation. Rinse and repeat!

With animals, this has occurred in a similar way, with **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_** such as amount of fat, size and ease of handling being bred into the populations of farm animals we see today. This process of planting wild plants and breeding wild animals is called domestication. When plants and animals are **\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**, humans change their characteristics to suit humans' needs.

These are the key concepts for this unit. We will have a lot of fun, and I hope you will enjoy evolution as much as I do!

**Key words to know:**

Diversity
Evolution
Survival needs
Adaptation
Natural selection
Artificial selection
Mutation
Survival of the fittest
Extinction
Homologous structures
Domestication