

Grade 7 Science

Week of Sept 28- Oct 2

Curricular Area: Biology

Lesson Materials (This PDF)

- Lesson 1.1 – Natural Selection
- 1.1 Natural Selection Learning Guide

Task

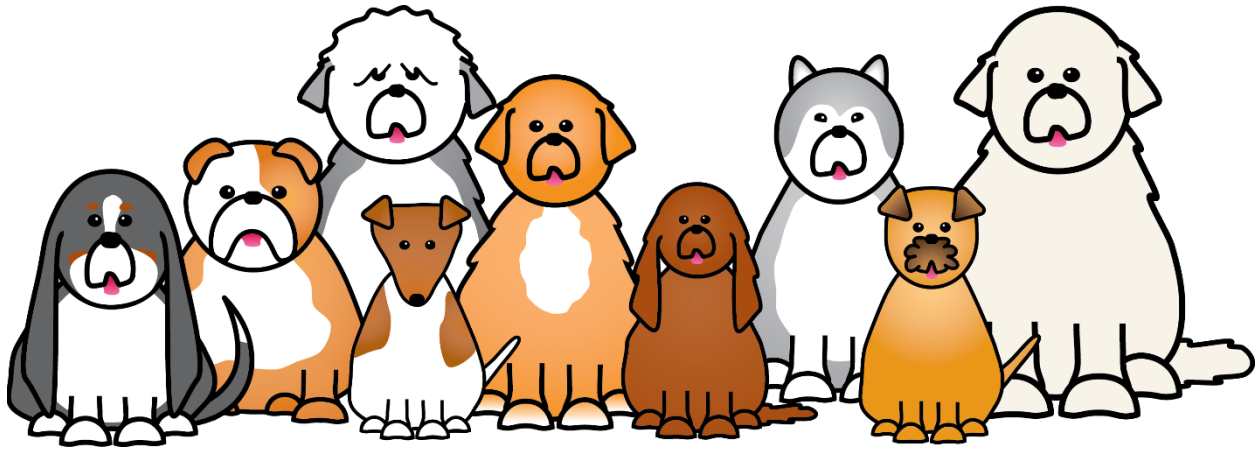
Read through Lesson 1.1. The Excretory System in this Learning Guide. After you read through the lessons, complete the activities in the Learning Guide which follow the lesson pages. You can print the Learning Guide, or, copy out the questions on a separate piece of paper.

What are species, populations and traits?

In order to discuss evolution and natural selection we must first look at some vocabulary to help us understand.

Species is a group of closely related organisms (individuals) that are very similar to each other and are usually capable of mating with other members of the species to produce offspring (babies) that are capable of reproducing when they mature.

For example, the following picture represents a species (dogs).



A **population** is a group of individuals of the same species living in the same area or region at the same time.

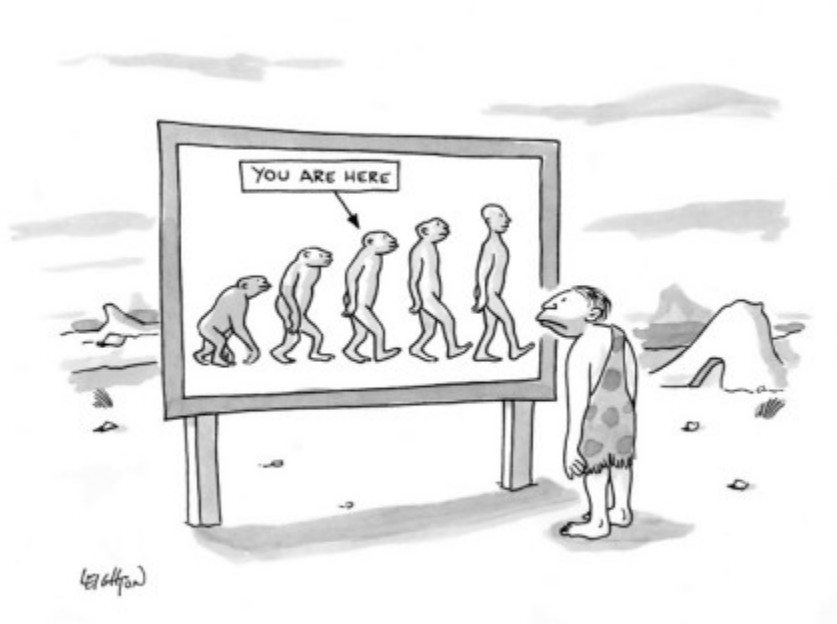
Trait is a specific feature of an individual.

For example, looking at the following pictures we see two dogs. (Dogs are a species). The size of each dog is the specific feature that differs so size is a trait. Dog A is bigger while Dog B is smaller.



Evolution

Evolution is the change of a **population of organisms** from one **generation** to the next.

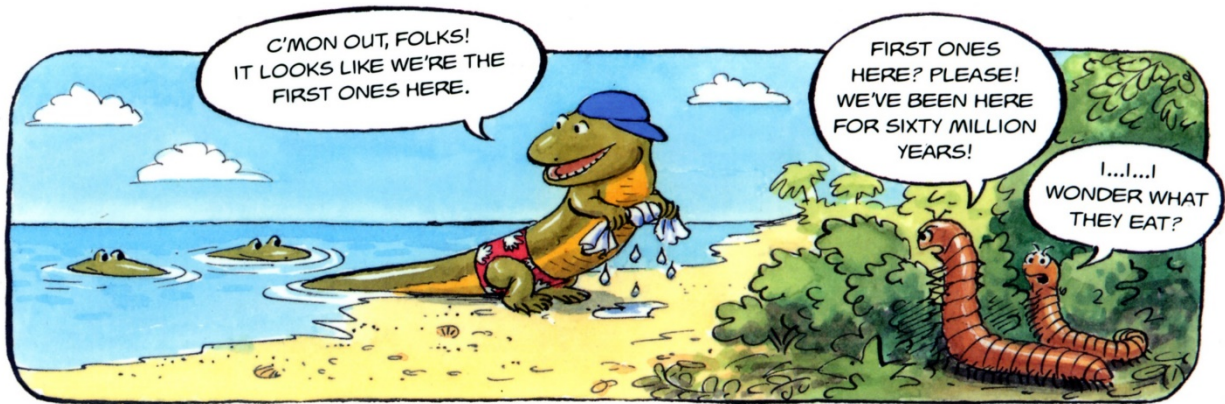


Evolution and Natural Selection

If evolution is change over time, how do these changes occur?

The mechanism of evolution is **natural selection**. **Natural Selection** occurs when organisms best suited for the environment reproduce more often and pass the **adaptation** to their offspring.

An Adaptation is a trait that has a functional role and allows the organism to be more successful than others in the population.



Video - Darwin's Theory of Natural Selection

[Click here for the video.](#)

Darwin's Conditions for Evolution:

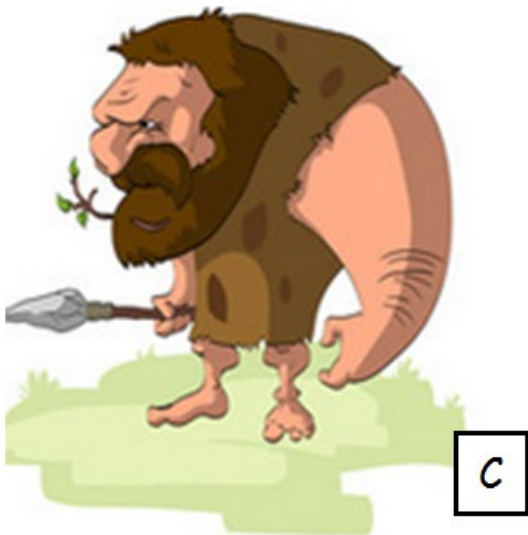
1. Individuals within a population differ.
2. Differences are passed from parents to offspring.
3. Some individuals are more successful at surviving and reproducing than others.
4. The successful individuals succeed because of variant traits they have inherited and will pass onto their offspring.

Individuals within a population differ.

When observing a population, you will notice that individuals are not identical (exactly the same).

For example:

Look at the 4 individuals below. As you can see, they are all members of the caveman population, but they are not identical. They are all the same species with different traits.



In your learning guide give two traits for each individual (A, B, C and D) that are different.

Differences are passed from parent to offspring.

Differences, or **adaptations**, are passed down from parents to their offspring (babies).

Remember: Adaptation is a trait that has a functional role and allows the organism to be more successful than others in the population.

For example, in the following cave family you can see that the offspring can jump very high and looks quite fast. Both of those traits will allow the offspring to be successful at hunting for food. His parents have passed on the trait of large feet on to him that have allowed him to be able to jump high and move fast.



What makes an individual more successful?

[Some individuals are more successful than others – check out this video: Brawn vs Brain.](#)

Success is based on an individual's ability to survive the longest and reproduce more.



The two rabbits below are living in the wooded area pictured above. Which rabbit will be more successful? Keep in mind rabbits are prey animals, which means they are hunted by larger predators.



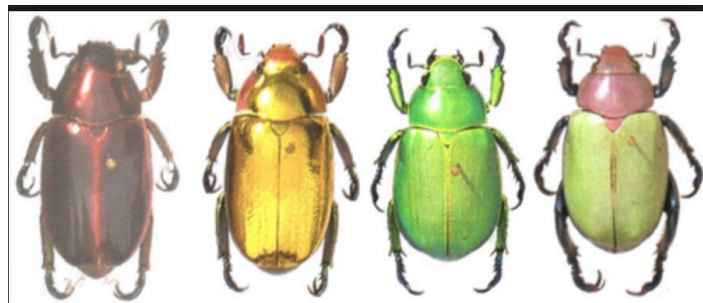
The brown rabbit will be more successful because it can blend in with the wooded environment easier than the white rabbit. The predator will be able to spot the white rabbit much quicker than the brown rabbit.

Factors that Affect Natural Selection

There are other factors which play an important role in natural selection.

1. Predators can help maintain a population so that it does not get too large. This means only the fastest and smartest individuals will survive.
2. Seasons can change a stable population. For example if there is an extremely cold winter, there might not be enough food to keep the entire population alive for the season. Therefore, only the strongest and most hardy individuals will survive.
3. Limited natural resources can reduce a population. When there is not enough food, water, or shelter for the entire population. The most resourceful individuals will survive.
4. No two individuals can be identical. This means that one individual will always be more successful than the other in some way.
5. Variation of individuals must be inheritable. For example, if it is beneficial that skin colour is red. They can not be spray painted red and pass that trait to their offspring.

Below you can see the variations in colour of the jewel scarabs.



Unit 1 ~ Learning Guide

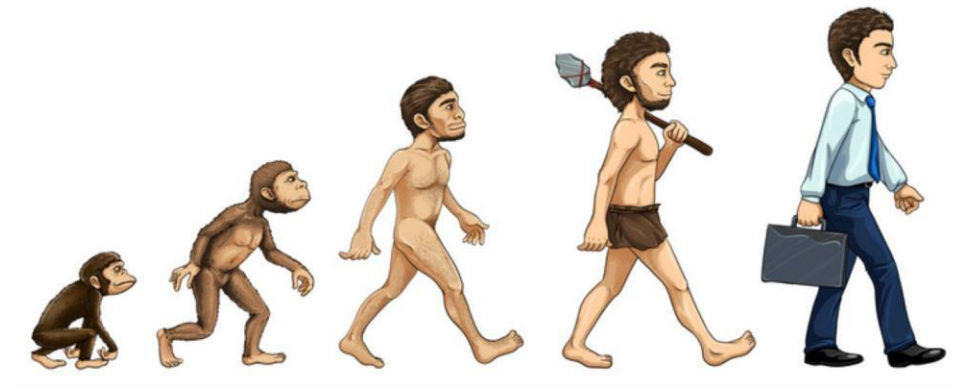
Name: _____

INSTRUCTIONS

Complete the following notes and questions as you work through the related lessons. You are required to have this package completed BEFORE you write your unit test. Do your best and ask questions about anything that you don't understand BEFORE you write the unit test.

1.1 NOTES: NATURAL SELECTION

In this section you will be learning all about the theory of evolution. You will also learn about how organisms survive and interact with one another as well as the environment.



Evolution refers to how a population _____ with each generation.

Terms to know:

1. _____
2. _____
3. _____
4. _____
5. _____
6. _____

Natural Selection

Natural selection is a _____ of evolution. Organisms that are better suited to a certain environment will _____ more than other organisms and _____ those adaptations on to their _____.

Species is a group of _____ organisms that can _____ offspring that will _____ when mature enough to do so.

An example of a species is _____.

A group of individual members of the same species living in the same area are referred to as a _____.

Each member of the group has specific _____, an example being size.

Darwin's Theory of Evolution

_____ Darwin is the person who explained to the world his ideas about evolution.

The four conditions for evolution are:

1. _____
2. _____
3. _____
4. _____



Individuals within a population differ

By observing a population, you can determine the traits that are _____.

Record the traits that are different as instructed.

Picture A	1.	2.
Picture B	1.	2.
Picture C	1.	2.
Picture D	1.	2.

Differences

Parents pass differences to their _____. Adaptation plays a _____ role allowing organisms to be successful.

Being able to _____ high is an adaptation trait.

Successful Individuals

An organism can be considered successful if it survives and _____.

The ability for an organism to blend in with its environment will increase the chance that the organism will _____ to reproduce.

Other factors that can influence natural selection

1. _____
2. _____
3. _____
4. _____
5. _____



3. In the environment below, which individual from each species would be more successful?
Explain your choice.

