1. Define the following terms:
   1. Evolution - Change in traits in a population over time
   2. Fitness – Chance an organism can pass on its genes to the next generation
   3. Natural Selection – The environment will dictate what organisms survive based on the organisms traits
2. What did people think about how the earth changed before modern science?

Did not change. Believed what ever the church/king told them.

1. Who was Jean Baptiste Lamarck?

First person to propose that populations change over time.

1. Give an example that would describe Lamarck’s theory of evolution.

Species passed down traits based on use and disuse. A great violin player would have children that are good at the violin.

1. How did people try to prove Lamarck wrong?

Runts in a litter of large dogs/pigs.

1. Who was Charles Darwin?

British naturalist that wrote the *Origin of Species*. Proposed the major ideas for the modern form of evolution.

1. Give an example that would describe Darwin’s theory of evolution.

If there are three different color moths (one black, one green and one white). The one has the best traits to survive will be the one that is seen in the environment.

1. Darwin often saw a large number of offspring born each year. He also saw that not all of these organisms survived to maturity. What did Darwin call this idea?

Overproduction

1. How did the idea in #8 fit into the idea of natural selection?

The best suited offspring will be the ones that survive.

1. Darwin also noticed that in any given population organisms had slight differences in their traits. What was this idea?

Genetic Variation

1. How did this fit in to his idea of evolution?

Those with the variations that are beneficial will survive.

1. What is an adaptation? Can an adaptation be acquired by an organism?

A trait that gives an organism an advantage in its environments. It must be passed down.

1. Give an example of three different organisms that have adaptations that help increase their fitness.
   1. Elephant’s trunks allow them to grab objects
   2. A hawk’s talons allow it to grasp prey
   3. A human’s brain allows them to do complex functions and communicate.
2. List five different ways that scientists support evolution with data and evidence. Give a brief description of each.
   1. Fossil Record – We can see the record of the common ancestors that existed before

* 1. Anatomical Evidence – Similar structures point to common ancestors

* 1. Genetic evidence – Comparing DNA shows us how closely related you are to other organisms
  2. Biogeography – Mapping common ancestors in different parts of the globe
  3. Embryo Evidence – Organisms that develop are similar in their development stages. Hints at common ancestry

1. What are two different ways to tell how old a fossil is?

Superposition and Carbon Dating

1. Imagine there are two different fossils. One is found on the surface of a hill and the other is buried deep below the hill. Which one is older?

Surface

1. Describe the difference between a homologous and an analogous structure.

Homologous – Similar structure based on ancestry

Analogous – Same basic design based on the environment

1. How can you explain the similarities between an emu and an ostrich?

They used to have a common ancestor. When they were split apart geographically, they changed to suit their individual environments.

1. How do modern scientists determine how closely related two different organisms are?

Genetic Testing

1. Why might the development of organisms play a key point in supporting evolution?

Many organisms share development stages.

1. What is a phylogenetic tree?

A geneticevolutionary family tree

* 1. Give an example below.

Fossil record we produced in class

1. What is convergent evolution? Please provide an example.

Two species adapt similar traits based on their environment.

Sharks and dolphins.

1. What is divergent evolution? Please provide an example.

One species changes into two different species because if the environment.

1. What is artificial selection?

Humans select the traits they desire, not nature

1. Give an example of artificial selection.

Dog’s traits are selected by humans.