

# Biological Evolution Standard 1 & 2 Study Guide

## Standard 1: Explain how our understanding of biological evolution has changed over time with new scientific research and discoveries

Science is based on three characteristics. They are:

1. \_\_\_\_\_
2. \_\_\_\_\_
3. \_\_\_\_\_

Describe the following scientists contributions to our understanding of biological evolution:

- Robert Malthus: \_\_\_\_\_  
\_\_\_\_\_
- Charles Lyell: \_\_\_\_\_  
\_\_\_\_\_
- Charles Darwin: \_\_\_\_\_  
\_\_\_\_\_
- Jean Baptise de Lamarck: \_\_\_\_\_  
\_\_\_\_\_
- Alfred Wallace: \_\_\_\_\_  
\_\_\_\_\_
- Hutton: \_\_\_\_\_  
\_\_\_\_\_

Both Lamarck and Darwin suggested ways that organisms inherit traits. **State** their theories **and explain** the difference between their theories.

Using absolute and relative dating techniques, data suggests the earth is \_\_\_\_\_  
\_\_\_\_\_ years old (don't forget units). The \_\_\_\_\_

suggests that older rock layers and fossils are found on the bottom and younger on the top. The age of fossil samples can be calculated using \_\_\_\_\_ dating. The \_\_\_\_\_ describes the relationships and timing of events during the history of earth. Three examples of fossils include \_\_\_\_\_, \_\_\_\_\_, and \_\_\_\_\_.

**Standard 2: Identify and explain different mechanisms (processes) that contribute to species changing over time.**

Explain the following terms in relation to biological evolution:

- Fitness: \_\_\_\_\_  
\_\_\_\_\_
- Natural Selection: \_\_\_\_\_  
\_\_\_\_\_
- Genetic Variation: \_\_\_\_\_  
\_\_\_\_\_
- Competition: \_\_\_\_\_  
\_\_\_\_\_
- Adaptation: \_\_\_\_\_  
\_\_\_\_\_
- Competition: \_\_\_\_\_  
\_\_\_\_\_

Due to selection, populations are always changing. In polygenic traits, a \_\_\_\_\_ shows the distribution or range of phenotypes for the trait. If one extreme of the trait is best fit for the environment this represents \_\_\_\_\_ selection; if both extremes of the trait are best fit for the environment this represents \_\_\_\_\_ selection; if the middle or average form of the trait is best fit for the environment this represents \_\_\_\_\_ selection. \_\_\_\_\_ Selection occurs when an individual selects a mate based on specific trait characteristics. For example, male peacocks have brightly colored feathers to attract mates.

Over time, competition, genetic variation within population, over production of offspring, adaptation, and natural selection can cause a \_\_\_\_\_ to evolve.

\_\_\_\_\_ Evolve, \_\_\_\_\_ do not.

**Types of Adaptations:**

Explain adaptation: \_\_\_\_\_

\_\_\_\_\_

Explain the three types of adaptations and give an example of each:

- **Behavioral:** \_\_\_\_\_

\_\_\_\_\_

a. Example: \_\_\_\_\_

- **Structural:** \_\_\_\_\_

\_\_\_\_\_

a. Example: \_\_\_\_\_

- **Physiological:** \_\_\_\_\_

\_\_\_\_\_

a. Example: \_\_\_\_\_