Name _____ Date _____ Class _____

SECTION 5-1 SECTION SUMMARY

Darwin's Voyage

Guide for Reading

- **How did Darwin explain the differences between species on the Galapagos Islands and on mainland South America?**
- **How does natural selection lead to evolution?**
- **How do new species form?**

In 1831, Charles Darwin left England on board the HMS *Beagle*. On the ship's voyage, Darwin was amazed by the tremendous diversity, or variety, of living things he saw. Today, scientists have identified more than 2.5 million species of organisms. A **species** is a group of similar organisms that can mate with each other and produce fertile offspring. In 1835, the *Beagle* reached the Galapagos Islands in the Pacific Ocean.

Darwin was surprised that many of the plants and animals on the Galapagos Islands were similar to organisms on mainland South America. However, there were also important differences. Darwin inferred that a small number of different species had come to the islands from the mainland. Eventually, their offspring became different from the mainland relatives. The finches on the Galapagos Islands were noticeably different from one island to another. The most obvious differences were the varied sizes and shapes of the birds' beaks. Beak shape is an example of an **adaptation,** a trait that helps an organism survive and reproduce. Darwin reasoned that plants and animals on the islands faced conditions that were different from those on the mainland. **Perhaps, Darwin thought, the species gradually changed over many generations and became better adapted to the new conditions.** The gradual change in a species over time is called **evolution.** Darwin's ideas are often referred to as the theory of evolution. A **scientific theory** is a well-tested concept that explains a wide range of observations.

In his book *The Origin of Species,* Darwin explained that evolution occurs by means of natural selection. **Natural selection** is the process by which individuals that are better adapted to their environment are more likely to survive and reproduce than other members of the same species. A number of factors affect the process of natural selection: overproduction, competition, and variations. Any difference between individuals of the same species is called a **variation.** Some variations make certain individuals better adapted to their environment because of helpful traits they possess. **Over a long period of time, natural selection can lead to evolution. Helpful variations gradually accumulate in a species, while unfavorable ones disappear.** Without variations, all members of a species would have the same traits. Only traits that are inherited, or controlled by genes, can be acted upon by natural selection.

Isolation, or complete separation, occurs when some members of a species become cut off from the rest of the species. **A new species can form when a group of individuals remains separated from the rest of its species long enough to evolve different traits.** Geographic *isolation* has occurred in the past because of continental drift.

Name _____ Date _____ Class _____

SECTION 5-1 REVIEW AND REINFORCE

Darwin's Voyage

◆ Understanding Main Ideas

Answer the following questions on a separate sheet of paper.

1. Who was Charles Darwin, and what did he do on the *Beagle's* voyage?
2. What is evolution?
3. Explain how the shape of a finch's beak is an example of an adaptation.
4. When members of a species compete, what do they compete for?
5. What happens when species overproduce offspring?
6. Suppose a variation makes an individual member of a species better adapted to its environment, how might that variation affect the individual's reproduction?
7. How does the environment "select" organisms?
8. How do helpful variations accumulate in a species over time?
9. Why can only traits controlled by genes be acted upon by natural selection?
10. How can isolation of a group result in a new species?

◆ Building Vocabulary

Fill in the blank to complete each statement.

11. A(n) _____ is a group of similar organisms that can mate with each other and produce fertile offspring.
12. A(n) _____ is a trait that helps an organism survive and reproduce.
13. A scientific _____ is a well-tested concept that explains a wide range of observations.
14. The process by which individuals that are better adapted to their environment are more likely to survive and reproduce is called _____.
15. That some newly hatched turtles can swim faster than others of the same species is evidence of _____ within the species.