ANSWER KEY

SECTION: HOW DOES EVOLUTION HAPPEN?

1. trait: a genetically determined characteristic
2. selective breeding: the human practice of breeding animals or plants that have certain desired traits
3. natural selection: the process by which individuals that are better adapted to their environment survive and reproduce more successfully than less well adapted individuals do; a theory to explain the mechanism of evolution

SECTION: NATURAL SELECTION IN ACTION

1. generation time: the period between the birth of one generation and the birth of the next generation
2. speciation: the formation of new species as a result of evolution

Section Review

SECTION: CHANGE OVER TIME

1. species
2. adaptation
3. evolution
4. A
5. Sample answer: Fossils of types of organisms that no longer exist are found. These fossils form a sequence of change and adaptation of populations of organisms over time.
6. Sample answer: There are fossils of four-legged land mammals that share some characteristics with modern whales and other hooved mammals. Also, there is a sequence of fossil organisms that have characteristics in between those of the ancient fossils and modern whales.
7. Sample answer: Whales breathe air with lungs (not gills) and breath through a spout that is like a nasal passage. Whales swim in an up-and-down "galloping" motion, as otters (not side to side like fish do).
8. Sample answer: A person's DNA is likely to be most similar to that of his or her biological parents, because the parents are most closely related to the person by birth.
9. Layer c; that layer is under layer b, so layer c was probably deposited earlier than layer b and is thus older.

SECTION: HOW DOES EVOLUTION HAPPEN?

1. Sample answer: A trait is a form of an inherited characteristic.
2. Sample answer: Selective breeding happens when humans choose which organisms will reproduce, and natural selection happens when the environment "chooses".
3. D
4. Darwin observed that many of the species of the GalE1pagos Islands were similar to those of South America but had unique adaptations.
5. From Malthus, Darwin developed the idea that populations are limited by food and other problems. From Lyell, Darwin developed the idea that conditions on Earth could change slowly over long periods of time.
6. Sample answer: *Overproduction* means that every organism can produce more offspring than will likely survive; *inherited variation* means that all offspring will have some differences; *struggle to survive* means the offspring have to compete with each other and with other organisms around them; and *successful reproduction* means those that are best adapted will probably have more offspring like themselves.
7. Sample answer: Darwin lacked the knowledge of genetics that helps explain how organisms inherit traits and why there is so much variety in organisms.
8. $\{ (50 \times 4) + [(80 - 50) \times 6]\} \div 80 =$ 4.75 spots average per beetle
9. Sample answer: natural forces and other organisms
10. Sample answer: Species on the island might evolve in a way similar to those of the GalE1pagos Islands.

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