Seventh Grade "Evolution" Assessment

1a. _____ is the change in a population of organisms over time.
   a. glaciation
   b. evolution

1b. Evolution is the change in a population for organisms over time caused by both genetic change and _____ factors.
   a. economic
   b. environmental

1c. Give an example of each of the two factors that cause evolution in a population.
_____
_____
_____
_____

2a. When a population or organism changes to better suit its environment, it is called
   a. adaptation
   b. cloning

2b. Adaptation occurs when organisms or populations change to better suit their _____.
   a. species
   b. environment
   c. times
   d. isolation

2c. What is adaptation, and why does it occur?
_____
_____
_____
_____

3a. Who traveled on the *Beagle* to the Galapagos Islands and wrote Origin of Species?
   a. James Watson
   b. Charles Darwin

3b. Who wrote Origin of Species as a result of his travels on the ship *Beagle*?
_____

3c. Who wrote Origin of Species, and what influenced him to do so?
_____
_____
_____

4a. What kind of animal did Darwin study in the Galapagos Islands?
   a. Finches
   b. Greyhounds

4b. What animals did Darwin focus on in the Galapagos Islands, which would become a major basis for his later theories?
_____

4c. What interesting things about Finches in the Galapagos Islands added to Darwin's theories?
_____
_____
_____
_____

5a. According to Darwin, good changes in the genetic makeup of a species, called _____, are passed on to the next generation.
   a. transference
   b. mutation

5b. In Darwin's theories, favorable _____ are passed on to offspring, improving a species.
   a. mutations
   b. effects
   c. reactions
   d. traditions

5c. How did Darwin propose that mutations encouraged evolution?
_____
_____
_____
_____

6a. Darwin proposed a theory called _____ selection, which states that the organisms best adapted to their environment survive and pass these adaptations on to their offspring.

6b. Darwin's theory of _____ _____ states that organisms well adapted to their environment are best able to survive and pass on their traits.
   a. genetic mutation
   b. natural selection
   c. special evolution
   d. population extinction

6c. What does Darwin's theory of natural selection explain?

_____
_____
_____
_____

7a. Comparative anatomy, geology, fossils, and DNA research all provide evidence in support of which theory?

a. atomic
b. evolution

7b. Tell two types of evidence that support the theory of evolution: _____ and _____.

7c. Choose two possible forms of evidence that support the theory of evolution. Tell how these two evidences are related to each other.

_____
_____
_____
_____
_____

8a. When an environment changes so much that a species is no longer adapted to it and can no longer survive, _____ occurs.

a. extinction
b. mutation

8b. What event occurs when an organism cannot adapt quickly enough to environmental changes?

_____

8c. Explain the process of extinction (from the evolution standpoint) and give one reason for it to occur.

_____
_____
_____

9a. When part of a population of organisms becomes separated from the rest for a long time, they may develop into a new _____.

9b. Speciation occurs when part of a population becomes separated from the rest and _____ in a different way than the rest.

a. evolve
b. reproduce

9c. Why does Speciation occur?

_____
_____
_____
_____

10a. According to the theory of Evolution, life forms have _____ from simple organisms in oceans to higher life forms.

a. evolved
b. regressed

10b. According to the theory of _____, life forms have changed from simple organisms in oceans to higher life forms.

a. Natural Selection
b. Extinction
c. Speciation
d. Evolution

10c. According to the theory of Evolution, what major change has taken place over time?

_____
_____
_____
_____

The following Colorado Model Content Standards are covered in this assessment by the questions indicated:

Questions 1a, 1b, 1c, 3a, 3b, 3c, 4a, 4b, 4c, 5a, 5b, 5c: Standard 1. Students understand the processes of scientific investigation and design, conduct, communicate about, and evaluate such investigations.

Questions 5a, 5b, 5c: Standard 2. Physical Science: Students know and understand common properties, forms, and changes in matter and energy.

Questions 1a, 1b, 1c, 2a, 2b, 2c, 4a, 4b, 4c, 5a, 5b, 5c, 6a, 6b, 6c, 7a, 7b, 7c, 8a, 8b, 8c: Standard 3. Life Science: Students know and understand the characteristics and structure of living things, the processes of life, and how living things interact with each other and their environment.

Questions 3a, 3b, 3c: Standard 5. Students know and understand interrelationships among science, technology, and human activity and how they can affect the world.

Questions 5a, 5b, 5c: Standard 6. Students understand that science involves a particular way of knowing and understand common connections among scientific disciplines.

Answer Key

1a. b. evolution
1b. b. environmental
1c. Acceptable answers could include:
-Genetic change could include when a mistake occurs in DNA replication during the formation of sex cells and the mistake is passed on to offspring.
-Environmental factors could include slow climate changes.

2a. a. adaptation
2b. b. environment
2c. Acceptable answers could include:
-Adaptation is when an organism or population changes to better suit its environment. -This may occur when organisms move to a new environment, or when the environment changes around them.

3a. b. Charles Darwin
3b. (Charles) Darwin
3c. Acceptable answers could include:
-Charles Darwin wrote it, and his influence was his travels on the ship *Beagle* to the Galapagos Islands and others, where he saw unique species that were variations of those on the mainland. He came up with his theories to explain the differences.

4a. a. Finches
4b. Finches
4c. Acceptable answers could include:
-The finches in the Galapagos Islands have different beaks than finches in other places. Darwin proposed that the finches had evolved different beak types to fit into specific niches on the islands to cut down on competition.

5a. b. mutation
5b. a. mutations
5c. Acceptable answers could include:
-Darwin proposed that favorable mutations encouraged survival, and when several individuals with the same favorable mutations reproduced, the mutation would be passed on and become more and more common, eventually supplanting the non-mutated population.

6a. Natural
6b. b. natural selection
6c. Acceptable answers could include:
-It explains that whatever organisms fit their niche best, or are best adapted to their environment, tend to survive longest and reproduce best, therefore becoming more common than organisms not well adapted.

7a. b. evolution

7b. Any two: comparative anatomy, geology, fossils, DNA research

7c. Acceptable answers could include:
-Any two of comparative anatomy, geology, fossils, DNA research.
-Answers may relate geology and fossils, speaking about rock records and how fossils are used to do comparative ages of rock layering, or relate DNA research and comparative anatomy now that we can genetically test species that seem related according to their anatomy and see how close they are in their genome.

8a. a. extinction

8b. Extinction

8c. Acceptable answers could include:
-Extinction: when organisms cannot adapt to their environment quickly enough, and so die off.
-Reasons for occurrence can vary widely, but can include natural disasters like volcano eruptions or major floods.

9a. Species

9b. a. evolve

9c. Acceptable answers could include:
-Speciation occurs sometimes when a part of a population is separated from the rest, and continue to live in an isolated area, which often has different environmental conditions than the rest of the population's home, and so the adaptations occur differently and are passed down. If this happens long enough, an entirely new species develops.

10a. a. evolved

10b. d. Evolution

10c. Acceptable answers could include:
-Life forms on earth have changed from simple ocean organisms to the complex life forms we have today.