

Name: _____

Period: _____

Evolution of Living Things Study Guide

Key vocabulary terms:

Natural selection
Charles Darwin
Selective breeding
Species
Evolution
Fossil
Fossil record
Embryo
Variation

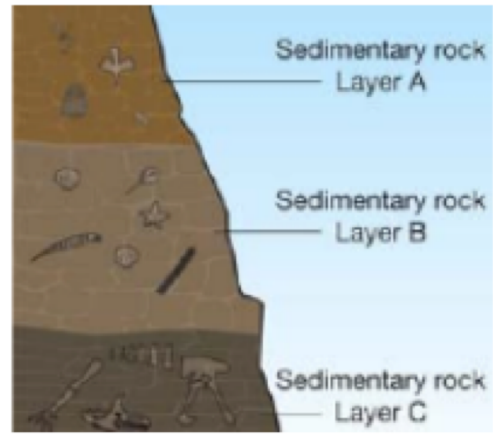
Adaptation
Artificial selection
Population
Homologous structure
Analogous structure
Vestigial structure
Generation time
Speciation

Change over time

1. What is the difference between homologous structures and analogous structures? **Provide examples of each.**
2. Define vestigial structure. Give 2 examples.
3. Why is the fossil record considered incomplete?
4. How does the fossil record show that species have changed over time?
5. List (4) pieces of evidence for evolution.
6. An adaptation is an inherited trait that helps an organism survive. Which statement best describes adaptation?
 - a. a lily suddenly mutates its tissues to store more water in a drought
 - b. fish swim away from a sudden source of pollution
 - c. a beetle hatches during a food shortage with a mutation that allows it to digest a greater variety of food
 - d. environmental factors are a cause of natural selection in which there are only favorable traits

7. Which of the following layers is youngest?

- a. Layer B
- b. Layer C
- c. Layer A



How does evolution happen?

1. Where did Darwin conduct his research?
2. What are some things that Darwin concluded when studying the finches?
3. Organisms that are well suited to their environment.....(finish the sentence)
4. Define natural selection.
5. What are some examples that could cause competition among species?
6. Compare artificial selection to natural selection.
7. Does natural selection act on phenotypes or genotypes? Explain.

8. Describe the four parts of natural selection in your own words (feel free to be creative with an example)
 - a. Populations over-reproduce
 - b. Individuals in a population vary
 - c. Struggle to survive
 - d. Successful reproduction (favorable adaptations accumulate)

9. Give an example of how a random mutation in an organism could give it an environmental edge over other members of its species.

10. A population of beetles eats only red flowers. Most of the beetles are red but a few of them are yellow. The red beetles are hidden from hungry, beetle-eating birds. The beetles eat up all of the red flowers and now there are only yellow flowers left. What would you expect to happen to the traits of the beetle population over time? What process would cause this to happen?

11. The dog breeds we have today were developed through:
 - a. natural selection
 - b. artificial selection (selective breeding)
 - c. sexual selection
 - d. acquired selection

12. The size of a white-footed mouse population is influenced by:
 - a. the availability of acorns, a main source of food
 - b. an increase in the owl population, a primary predator
 - c. an extremely dry summer leading to a severe drought
 - d. all of the above

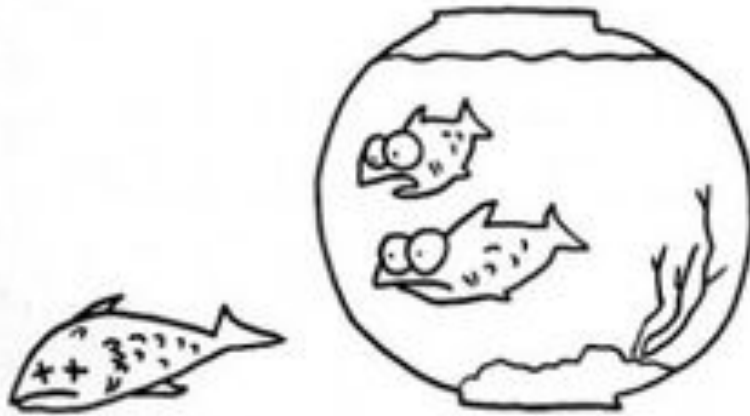
13. Variation in a population:
 - a. is not random and occurs due to an environmental change
 - b. describes only changes in the behavior of a species
 - c. is acquired throughout an organism's lifetime
 - d. happens by chance and is passed on to offspring

14. Darwin referred to selective breeding as _____ because the breeders selected the desired traits to produce changes in a species over a few generations.
- natural selection
 - artificial selection
 - magic
 - extinction
15. Thomas Malthus had an argument that helped support Darwin's ideas about evolution. What was Malthus' argument?
- overproduction of food causes populations to decrease
 - food supplies usually grow faster than human populations
 - human populations tend to grow slower than their food supply
 - human populations tend to grow faster than their food supply

Natural selection in action

1. What are three ways in which speciation can occur?
2. Explain how isolation of populations can lead to speciation. **Provide examples.**
3. What factors indicate that a population has evolved into two separate species?
4. Most cactuses have spines, which are leaves modified to protect the plant. The spines cover a juicy stem that stores water. Explain how cactus leaves and stems might have changed through the process of natural selection.
5. Describe how a short generation time in insects leads to pesticide resistance.

6. As environmental conditions change over time, which population will have a better chance of survival?
- a. a population with a high level of variation
 - b. a population with several very fit and genetically similar organisms
 - c. organisms that mutate very rarely
 - d. a population that feeds exclusively on one type of food
7. A group of mice becomes separated by the formation of a river. Over time, the northern mice became smaller and whiter, while the southern mice became larger and browner. This is an example of:
- a. analogous structures
 - b. homologous structures
 - c. embryology
 - d. natural selection



... then he yelled "evolution!"
and simply jumped out ...