

## Evolution Concept Questions

1. What is evolution? Why is evolution referred to as a theory?
2. What does the fossil record tell us about evolution?
3. Why are fossils of many species not found in the fossil record?
4. What two ideas in geology were important for Darwin's thinking?
5. How did his visit to the Galapagos Islands influence Darwin's thinking?
6. a) What is artificial selection? How does it differ from natural selection?  
b) How did artificial selection influence Darwin's thinking?
7. How does the concept of descent with modification explain the variety of species observed today?
8. How would you summarize the main ideas in Darwin's theory?
9. How does natural variation affect evolution?
10. How is the process of natural selection related to a population's environment?
11. How does the process of natural selection account for the diversity of organisms that have appeared over time? What is being selected in the process? What is selecting it?
12. Distinguish between fitness and adaptation. Give an example of each.
13. How might natural selection have produced the modern giraffe from short-necked ancestors?
14. a) How is the general understanding of survival of the fittest misleading?  
b) What do we mean when we describe an organism as "more fit" than some other organism?
15. What role do mutations play in evolution?
16. How does sexual reproduction benefit a species?
17. What term describes each of the following?
  - a) Two species may live in the same area but in different habitats. Since there is little if any contact the possibility of successfully mating is drastically reduced.
  - b) Since the breeding times of similar organisms are different there is no chance of reproductive contact.
  - c) Birds, mammals, and insects have pre-mating rituals that attract the proper mate.
  - d) A physical barrier separates a species into two separate areas and does not allow any further contact.
18. How did the breakup of Pangea and then of Gondwana contribute to the variety of species?
19. Predict what may eventually happen to two snail populations living on either side of a road.
20. How can a population not separated geographically, diverge into two separate species?
21. a) Explain the difference between homologous and analogous. Give examples of each.  
b) How could two analogous structures arise?
22. What can we learn about evolution from looking at the embryos of vertebrates?
23. What is meant by the term vestigial structure? How do they provide evidence of evolution?
24. a) If you looked at the DNA of two closely related species, what would you expect to find?  
b) What can be learned through protein comparisons of two different species? Give an example.
25. How can two species that look very different from each other be more closely related than two species that look similar to each other?
26. Currently, health officials worldwide are becoming more and more concerned that bacteria are becoming resistant to antibiotics. How can this resistance be evolving?
27. Is protecting endangered species upsetting the process of natural selection?