

Honors Study Guide: Evolution

Define the following words:

1. Bell Curve: Curve rises then falls, symmetric shape, average in middle
2. Gene pool: total genetic information in a population
3. Fossils: remains of organisms that lived long ago
4. Geographic Isolation: physical separation of members of a population
5. Gradualism: Speciation @ a regular, gradual rate
6. Punctuated Equilibrium: things stay the same then there is a quick change
7. Adaptive Radiation: process in which organisms rapidly spread into new forms.

Short Answers

1. What are Darwin's four postulates? Be able to apply them to a situation.
 - overproduction
 - differential reproduction
 - genetic variation
 - struggle to survive
2. What are the main requirements of speciation? Be able to apply them to a situation.
 - Time (lots of generations)
 - Different environments (different selective pressures).
 - reproductive isolation
3. Describe how genetic variation is produced.
 - mutations in sperm or egg
 - recombination, shuffling through crossing over, independent assortment
 - random pairing of gametes (sexual reproduction)
4. Two wolves are compared. Wolf "A" lived for 21 years and had 5 pups, 4 of which survived into adulthood. Wolf "B" lived 18 years and had 5 pups that all survived to adulthood. Which wolf is more fit? EXPLAIN.
B, more pups to adulthood
5. A tiny four-legged creature competes with others for food. One day it decided to stretch its neck to reach the nice juicy leaves on trees. This creature was more successful in obtaining food, lived longer, and passed his long neck onto multiple offspring. Evolutionary biologists claim this story is incorrect. Give an alternative explanation (that includes the process of natural selection) for how giraffes' evolved a long neck.
There are more individuals born than can reproduce. Among all individuals there is variation in the population and they each struggle to survive. Through natural selection organisms that are more fit for their environment are able to survive & thus have more offspring than individuals that are less fit. For giraffes, the longer neck length was more beneficial.
6. What do the letters on the cladogram represent?
Shared characteristics, a trait that they have in common
7. Which two organisms are the most closely related on the cladogram?
D & E

