Name _____

AP Biology
Chapter 24 - The Origin of Species

Guided Reading Assignment Campbell's 10th Edition

Essential Knowledge
1.C.2 Speciation may occur when two populations become reproductively isolated
2.E.2 timing and coordination of physiological events are regulated by multiple mechanisms
1.C.3 Populations of organisms continue to evolve
1.C.1 Speciation and extinction have occurred throughout the Earth's history

LO 1.11 The student is able to design a plan to answer scientific questions regarding how organisms have changed over time using information from morphology, biochemistry and geology
LO 1.22 The student is able to use data from a real or simulated population(s), based on graphs or models of types of selection, to predict what will happen to the population in the future.
LO 1.23 The student is able to justify the selection of data that address questions related to reproductive isolation and speciation.
LO 1.24 The student is able to describe speciation in an isolated population and connect it to change in gene frequency, change in environment, natural selection and/or genetic drift.

1. Define the following terms:
   a. Speciation

   b. Anagenesis

   c. Cladogenesis

2. What is the biological species concept?

3. What are the differences between prezygotic and postzygotic barriers to reproduction?

4. Identify each of the following as prezygotic or postzygotic barriers and write a brief definition and example of each:
   a. Habitat isolation

   b. Temporal isolation

   c. Behavioral isolation

   d. Mechanical isolation

e. Gametic isolation

f. Reduced hybrid viability

g. Reduced hybrid fertility

h. Hybrid breakdown

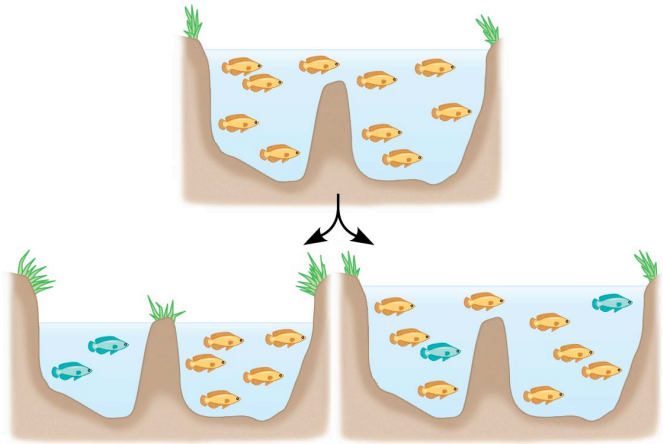
5. Detail these other definitions of species:
   a. Morphological species concept

   b. Paleontological species concept

   c. Ecological species concept

   d. Phylogenetic species concept

6. What is the basis for allopatric speciation?



7. Label the diagram with labels for allopatric or sympatric speciation

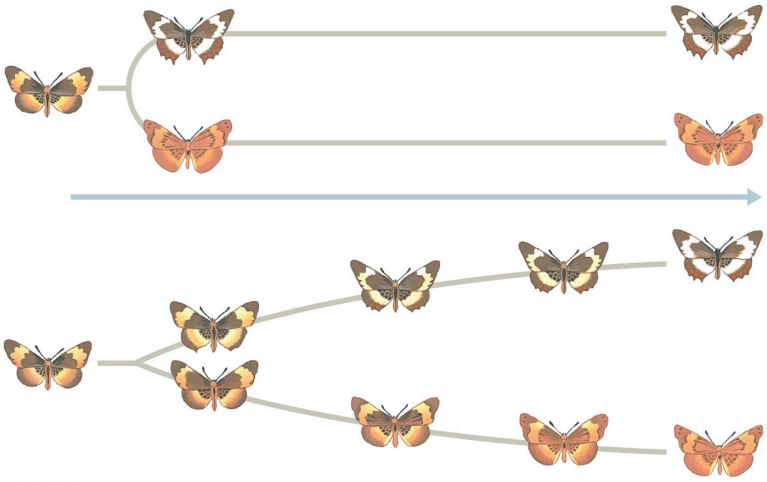
8. What does sympatric speciation mean?

9. What is the difference between autopolyploidy and allopolyploidy?

10. In what types of organisms are polyploidy speciation more common and why do you think this occurs?

11. What is adaptive radiation and why do island chains tend to be discussed often with this topic?

12. Compare and contrast the models of punctuated equilibrium to gradualism as models for the rate of evolution. Does one have to exclude the other?



13. Label the diagram to show the punctuated or gradual model

14. Define the following terms:
    a. Heterochrony

    b. Allometric growth

    c. Paedomorphosis

    d. Homeotic genes

15. How does the evolution of the horse exemplify the concept that evolution is driven by the interactions of the organism and its environment?

16. **Complete text Investigation 24.2 "How do new species arise from genetic isolation" found on disc or through online text under Concept 24.2 heading – type your completed data table with headings and answer questions 1-7 of the activity using complete sentences that EXPRESS a complete thought.**