Reading Guide Packet: Chapter 18: Evolution of Populations
Biology B

Name_____Period_____

Chapter 18.1: Genes and Variation

1. What is a *gene pool*, and how do *allele frequencies* describe them?

2. How is *evolution* defined genetically?

3. Does natural selection act on *genotypes* or *phenotypes*?

4. What are the three main sources of genetic variation?

5. What determines the number of phenotypes produced for a trait?

Chapter 18.2: Evolution as Genetic Change

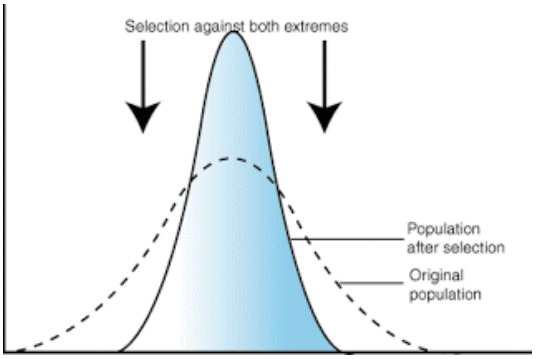
6. How does natural selection act on single-gene traits?

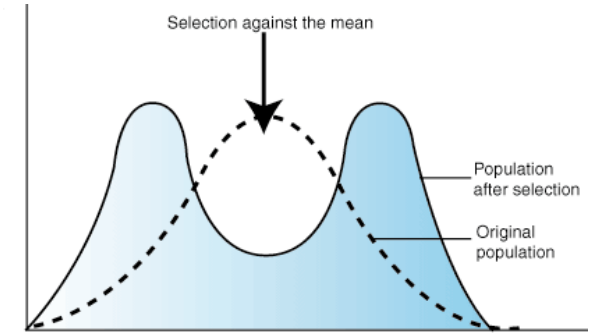
7. How does *directional selection* affect the relative fitness of phenotypes in a polygenic trait?

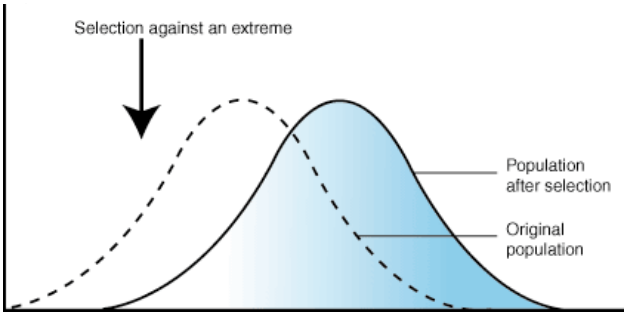
8. How does *stabilizing selection* affect the relative fitness of phenotypes in a polygenic trait?

9. How does *disruptive selection* affect the relative fitness of phenotypes in a polygenic trait?

10. Label the following graphs as *directional, stabilizing* or *disruptive selection*.







11. What kinds of populations can experience *genetic drift*?

12. What are the similarities and differences between the *bottleneck effect* and the *founder effect*?

13. What is *genetic equilibrium*? What does the *Hardy-Weinberg principle* specify as the conditions that can disturb it and cause evolution to occur?

14. How can *sexual selection* affect genetic equilibrium?

15. What are two examples of *gene flow* that can affect genetic equilibrium?

Ch 18.3: The Process of Speciation

16. Define *speciation*.

17. Give three examples of *reproductive isolation*, and describe how each can occur.

18. Describe the progression of the *speciation* process of Galapogos finches.

Ch 18.4: Molecular Evolution

19. The duplication, followed by modification, of existing genes can lead to what outcome?

20. Why might small changes in Hox gene activity during embryological development be important to the evolution of a species?

21. How do molecular clocks estimate the time that two speces have been evolving independently?