12. Lamarck hypothesized that all organisms have an innate tendency toward perfection, and that traits acquired during one's lifetime could be passed on to offspring.
13. Malthus influenced Darwin with his concept that organisms will produce more offspring than can survive or reproduce.
14. In 1858, Alfred Wallace developed a theory of natural selection almost identical to Darwin's.
15. Because Darwin had developed and supported his theory more extensively, he is most well recognized for his work.
16. Variation naturally exists among organisms - for example, some trees produce larger fruit than others.
17. When humans breed domesticated plants and animals for specific characteristics, it is known as artificial selection.
18. If there are not enough resources to support the number of individuals born, there will arise a struggle for existence.
19. Only the most fit members of a species will survive.
20. Adaptations are inherited characteristics that increase the chances of survival.
21. Over time, natural selection will result in changes to the inherited characteristics of a population (or species).
22. Natural selection can only be observed as changes in populations over many generations.
23. Darwin's concept of survival of the fittest implies that those organisms best adapted to their environments will live the longest and have the most reproductive success.
24. Darwin's concept of decent with modification implies that all living organisms are related.
25. Evidence of evolution can be categorized into four main groups: 1) the fossil record; 2) geographic distribution of living things; 3) homologous structures of living organisms; and 4) similarities in early embryology.
26. A vestigial organ is an organ with little or no function, such as the human appendix.
27. It is important to remember that evolution does not act on individuals, but on populations over time.
28. A population is a group of interbreeding organisms of the same species that live in the same geographical area.
29. Interbreeding leads to members sharing common genes, so the members are said to belong to the same gene pool.
30. There are two main causes of genetic variety: 1) mutations, which are caused by a mistake when replicating DNA, or exposure to harmful chemicals/radiation; and 2) gene shuffling, which is the results of independent assortment of chromosomes and crossing over during meiosis.
31. Today, evolution is understood to be the change in the allele frequencies of a particular allele in a gene pool.
32. When the relative frequency of a particular allele does not change, that population is said to be in genetic equilibrium.
33. Natural selection is not the only source of genetic change.
34. In small populations, individuals carrying a particular allele may have more offspring than others, simply by chance.
35. When allele frequencies change as a result of the migration of a small subgroup, it is known as the founder effect.
36. Hardy and Weinberg decided to find out what it takes for no evolution to take place.
37. In order for the Hardy-Weinberg principle to be true, five conditions must be met:
    1) mating must be random;
    2) the population must be large;
    3) there can be no immigration or emmigration
    4) there can be no mutations; and
    5) natural selection must not take place.
38. The Hardy-Weinberg principle provides a standard against which changes can be measured.
39. The formula for Hardy-Weinberg equilibrium is: $p^2 + 2pq + q^2 = 1$
40. "p" represents the relative frequency of the dominant allele.
41. "q" represents the relative frequency of the recessive allele.