

Unit 5 Test
Plant and Animal Genetics

Name _____ Date _____ Hour _____

Multiple Choice

Choose the answer that best completes each statement or question.

- ___ 1. Gregor Mendal discovered the basic principles of ____.
- A. animal science
 - B. crop science
 - C. genetics
 - D. biotechnology
- ___ 2. The garden pea was ideal for studying because it ____.
- A. has distinct characteristics
 - B. reproduces asexually
 - C. requires little water
 - D. was discovered by Mendel
- ___ 3. Sex cells are called ____.
- A. gametes
 - B. pollens
 - C. zygotes
 - D. alleles
- ___ 4. Mendel referred to his first generation cross of the parent plants as the ____ generation.
- A. P₁
 - B. P₂
 - C. F₁
 - D. F₂
- ___ 5. The basic unit of heredity, which contains the information to control traits, is a(n) ____.
- A. allele
 - B. gene
 - C. genome
 - D. gamete

- ___ 6. The alternative forms of genes are called ____.
- A. alleles
 - B. genes
 - C. genomes
 - D. gametes
- ___ 7. The observable characteristic, such as seed color is known as the ____.
- A. genotype
 - B. phenotype
 - C. gamete
 - D. inheritance
- ___ 8. An organism that has both a dominant and recessive allele is considered ____.
- A. homozygous
 - B. heterozygous
 - C. hybrid
 - D. dihybrid
- ___ 9. The concept which states the dominant trait will override the recessive trait is known as ____.
- A. rule of dominance
 - B. law of segregation
 - C. law of independent assortment
 - D. law of incomplete dominance
- ___ 10. The concept which states that one parent provides one of the two alleles or genes for each trait is known as ____.
- A. rule of dominance
 - B. law of segregation
 - C. law of independent assortment
 - D. law of incomplete dominance
- ___ 11. The concept which states that genes for certain traits are inherited independently of each other is known as the ____.
- A. rule of dominance
 - B. law of segregation
 - C. law of independent assortment
 - D. law of incomplete dominance

- ___ 12. If the allele for a tall plant (T) is dominant over the allele for a short plant (t), what would the genotype be for a short plant?
- A. TT
 - B. Tt
 - C. tT
 - D. tt
- ___ 13. If a homozygous dominant parent (TT) were crossed with a homozygous recessive parent (tt), what would be the probability that the offspring would be homozygous recessive?
- A. 0
 - B. 2:2
 - C. 3:1
 - D. 1:3
- ___ 14. If two heterozygous parents (Tt), what would be the probability that the offspring would be homozygous recessive?
- A. 0
 - B. 2:2
 - C. 3:1
 - D. 1:3
- ___ 15. If a purple flowered snapdragon (PW) were crossed with a white flowered snapdragon (WW), what is the chance the offspring would be a purple flowered snapdragon?
- A. 0
 - B. 2:2
 - C. 3:1
 - D. 1:3
- ___ 16. The probability that characteristics or traits will be pass from parent to offspring is known as ____.
- A. compatibility
 - B. heritability
 - C. hybridization
 - D. selectiveness
- ___ 17. Before genetic engineering can occur, scientists must identify the gene that controls the desired trait through the process of ____.
- A. DNA mapping
 - B. gene selection
 - C. gene mapping
 - D. vector mapping

- ___ 18. The four nitrogen bases that make up DNA are ____.
- A. adenine, thymine, guanine, and cytosine
 - B. adenine, thymine, nucleic acid, and cytosine
 - C. adenine, tryptophan, guanine, and cytosine
 - D. adenine, thymine, guanine, and calcium
- ___ 19. Once the gene for a specific trait has been located, restriction ___ are used to cut the DNA.
- A. genes
 - B. enzymes
 - C. vectors
 - D. plasmids
- ___ 20. Once the DNA has been cut for genetic engineering, the DNA is attached to a ___ that will allow them to be introduced to the host organism's cell.
- A. gene
 - B. enzyme
 - C. vector
 - D. nucleotide

True or False

Determine if each statement is true or false.

- ___ 21. Self-pollination requires the transfer of pollen from the anther to the stigma of different flowers.
- ___ 22. If a dominant allele is present, the recessive trait will seem to disappear.
- ___ 23. Mendel's first experiment was a dihybrid cross, meaning the two parents differed only by a single trait.
- ___ 24. If the allele for round seeds (R) is dominant over the allele for wrinkled seeds (r), the genotype (Rr) would result in round seeds.
- ___ 25. The Mendal Square was developed to predict the possible genotype of an offspring.
- ___ 26. Incomplete dominance occurs when neither gene is totally dominant over the other.
- ___ 27. Hybridization allows farmers to produce plants that are more vigorous.
- ___ 28. Genetic engineering is a quicker and more reliable method of selecting specific traits.
- ___ 29. An example of a product developed using genetic engineering is bovine somatotropin (BST).
- ___ 30. The EPA assures that products produced through biotechnology are safe to be grown or used.

Matching

Match each term with the correct definition.

- A. genetics
- B. heredity
- C. hybrid
- D. monohybrid
- E. dihybrid

- ___ 31. passing of characteristics from one generation to another
- ___ 32. offspring of a cross of two parents differing only by a single trait
- ___ 33. study of how traits or characteristics are passed from parent to offspring
- ___ 34. cross between plants that differ from each other in two traits of interest
- ___ 35. offspring of a cross

Short Answer

36. Summarize the three principles that Mendel discovered through his experiments.

37. What is selective breeding?

38. Why do cattle producers use Expected Progeny Differences?
