

Assessment

Chapter Test

Mendel and Heredity

In the space provided, write the letter of the term or phrase that best completes each statement or best answers each question.

- _____ 1. When two different alleles occur together, the one that is expressed is called
- a. dominant.
 - b. phenotypic.
 - c. recessive.
 - d. superior.
- _____ 2. An organism that has inherited two of the same alleles of a gene from its parents is _____ for that trait.
- a. hereditary
 - b. heterozygous
 - c. homozygous
 - d. a mutation
- _____ 3. The law of segregation states that
- a. alleles of a gene separate from each other during gamete formation.
 - b. different alleles of a gene can never be found in the same organism.
 - c. each gene of an organism ends up in a different gamete.
 - d. each gene is found on a different molecule of DNA.
- _____ 4. The law of independent assortment applies only to genes that are
- a. sex-linked.
 - b. located on different chromosomes or are far apart on the same chromosome.
 - c. located on the same chromosome.
 - d. autosomal.
- _____ 5. Colorblindness
- a. is a Y-linked trait.
 - b. is seen in homozygous dominant individuals.
 - c. provides resistance to malaria infections.
 - d. is a sex-linked trait.
- _____ 6. If a characteristic is sex-linked, it
- a. occurs most commonly in males.
 - b. can never occur in females.
 - c. occurs only in females.
 - d. is always fatal.
- _____ 7. Which of the following is an example of incomplete dominance?
- a. a pedigree analysis
 - b. a pink color in snapdragon flowers
 - c. the inheritance of albinism
 - d. a mutation

Chapter Test *continued*

Questions 8–11 refer to the figure below, which shows a cross between two rabbits. In rabbits, black fur (*B*) is dominant to brown fur (*b*).

		<i>B</i>	<i>b</i>
<i>Bb</i> × <i>Bb</i>	<i>B</i>	1	2
	<i>b</i>	3	4

- _____ 8. The device illustrated above, which is used to organize genetic analysis, is called a
- Mendelian box.
 - Punnett square.
 - genetic graph.
 - phenotypic paradox.
- _____ 9. The fur in both of the parents in the cross is
- black.
 - brown.
 - homozygous dominant.
 - homozygous recessive.
- _____ 10. The phenotype of the offspring indicated by Box 3 would be
- brown.
 - a mixture of brown and black.
 - black.
 - The phenotype cannot be determined.
- _____ 11. The genotype ratio (*BB* : *Bb*) of the F₁ generation would be
- 1:1.
 - 3:1.
 - 1:3.
 - None of the above

Complete each statement by writing the correct term or phrase in the space provided.

- _____ 12. Which of the following investigators carried out studies that formed the basis of modern genetics?
- Reginald Punnett
 - Gregor Mendel
 - Thomas Morgan
 - Charles Darwin
- _____ 13. The garden pea is a good subject for genetic study because it
- clearly shows codominance.
 - has many characters with two clearly different forms.
 - produces few offspring.
 - All of the above

Chapter Test *continued*

- _____ 14. The first step in Mendel's garden pea experiments was to
- remove the stamens of flowers on the plants.
 - cross-pollinate two P generation plants with contrasting traits.
 - allow each plant variety to self-pollinate for several generations.
 - allow the F₁ generation to self-pollinate.
- _____ 15. Which ratio of dominant to recessive phenotypes did Mendel find in his F₂ generation?
- 1:3
 - 3:1
 - 2:1
 - 4:1
- _____ 16. Black fur is dominant to brown fur in rabbits. White and gray fur exhibit incomplete dominance. How can you find out the genotype of a rabbit with black fur?
- Mate the black rabbit with a white rabbit.
 - Mate the black rabbit with another black rabbit.
 - Mate the black rabbit with a gray rabbit.
 - Mate the black rabbit with a brown rabbit.
- _____ 17. Which of the following is true when analyzing a pedigree?
- If a disorder is caused by a recessive trait, every offspring afflicted with the disorder will have a parent with the disorder.
 - If a disorder is caused by a dominant trait, two normal parents can produce an offspring with the disorder.
 - If a disorder is caused by a recessive trait, the normal parents of every offspring with the disorder are carriers.
 - If a disorder is caused by a sex-linked trait, only male offspring will have the disorder.
- _____ 18. Genetic disorders are caused by
- faulty proteins.
 - genetic mutations.
 - damaged genes.
 - All of the above
- _____ 19. Which of the following shows codominance?
- ABO blood types
 - skin color
 - height
 - albinism
- _____ 20. What is probability?
- a genetic disorder
 - a model that predicts the results of genetic crosses
 - the law of segregation
 - the likelihood that a specific event will occur