Test Prep Pretest

1. d
2. c
3. d
4. b
5. d
6. a
7. c
8. c
9. a
10. b
11. a
12. d
13. c
14. b
15. b
16. b
17. Mendel
18. phenotype, genotype
19. monohybrid
20. polygenic characters
21. linked
22. Mendel calculated an approximate 3:1 ratio of contrasting traits. He derived this ratio by counting plants expressing each type of trait he was comparing. Using division, he found that the ratio of plants expressing the dominant trait to plants expressing the recessive trait was about 3:1.
23. the law of segregation and the law of independent assortment
24. Sample answer: In the winter, the genes of the arctic fox that code for enzymes involved in pigment production do not function because of the cold temperature. Thus, the coat of the fox is white, and the animal blends in well with its surroundings. In warmer weather, these genes function and the fox's coat darkens to a reddish brown.
25. Sex-linked genes usually are located on the X chromosome. Because females have two X chromosomes, females usually have at least one dominant allele to hide any recessive alleles for sex-linked traits. However, males only have one X chromosome and thus show sex-linked traits more often.

Quiz

SECTION: ORIGINS OF HEREDITARY SCIENCE

1. d
2. c
3. d
4. a
5. a
6. c
7. a
8. e
9. d
10. B

SECTION: MENDEL'S THEORY

1. a
2. c
3. d
4. b
5. c
6. e
7. b
8. d
9. f
10. a

SECTION: MODELING MENDEL'S LAWS

1. d
2. c
3. a
4. b
5. f
6. b
7. e
8. d
9. c
10. A

SECTION: BEYOND MENDELIAN HEREDITY

1. a
2. b
3. d
4. c
5. b
6. c
7. f
8. e
9. d
10. A

Chapter Test (Basic)

1. T
2. F
3. T
4. T
5. a
6. c
7. a
8. b
9. a
10. a
11. b
12. alleles
13. F_1
14. traits
15. probability
16. character
17. sex-linked
18. c
19. a
20. b
21. b
22. c
23. a
24. d

Chapter Test (General)

1. a
2. c
3. a
4. b
5. d
6. a
7. b
8. b
9. a
10. c
11. d
12. b
13. b
14. c
15. b
16. d
17. c
18. d
19. a
20. d

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Chapter Test (Advanced)

1. e
2. j
3. h
4. a
5. c
6. g
7. d
8. f
9. b
10. i
11. F_2
12. sex-linked
13. *Pp* and *pp*
14. 3:1
15. recessive
16. characters, traits
17. cross-pollinate
18. self-pollinate, true-breeding
19. Some characters are controlled by several genes rather than by only one.
20. Most sex-linked traits are carried as alleles on the X chromosome. A male expresses a sex-linked recessive trait if he gets the allele for the trait from his mother. He cannot get an X chromosome from his father. To express a sex-linked recessive trait, a female has to get the allele for the recessive trait on both of the X chromosomes she receives—one from her mother and one from her father.
21. Examples include the changing colors of the arctic fox's fur in response to changes in the season, human height in response to diet, and human behavior in response to the environment.
22. type A: I^AI^A, I^Ai; type B: I^BI^B, I^Bi; type AB: I^AI^B; type O: *ii*
23. the law of segregation and the law of independent assortment
24. Any three of the following: Several characters of garden peas exist in two clearly different forms, such as purple and white flowers. Male and female reproductive parts of garden peas are enclosed in the same flower, so a researcher can control mating by allowing a flower to self-fertilize or by cross-pollinating flowers. Garden peas grow easily, mature quickly, and produce many offspring—so results can be obtained quickly.
25. Mendel allowed each variety of garden pea to self-pollinate for several generations, selecting plants from each generation that exhibited one form of a character. He did this until all of the offspring of a given variety produced only one form of a particular character.

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