Bio12-Q2W2-Test 1-Human Heredity

True/False
Indicate whether the statement is true or false.

____ 1. In humans, there are 23 pairs of matching homologous chromosomes called autosomes.

____ 2. The first known example of sex-linked inheritance was discovered in pea plants.

____ 3. Multiple alleles can be studied only in individuals.

____ 4. Traits controlled by more than two alleles are said to have multiple alleles.

____ 5. Two chromosomes called the sex chromosomes determine the sex of an individual.

____ 6. Traits controlled by genes located on sex chromosomes are called sex-linked traits.

____ 7. The sex chromosomes of a human male are XX, and the sex chromosomes of a human female are XY.

Modified True/False
Indicate whether the statement is true or false. If false, change the identified word or phrase to make the statement true.

____ 8. Polygenic inheritance occurs when there are more than two alleles for a single trait. _____

____ 9. Differing hormone levels among sexes can cause a single genotype to express more than one phenotype.
_____

____ 10. More than two phenotypes result from both multiple allelic inheritance and polygenic inheritance.
_____

Matching

Match each item with the correct statement below.

a. cystic fibrosis
b. simple dominant traits
c. Tay-Sachs disease
d. Huntington's disease
e. phenylketonuria

____ 11. Most common genetic disorder among white Americans
____ 12. Recessive disorder that results from the absence of an enzyme that converts one amino acid into another one
____ 13. Lethal genetic disorder caused by a dominant allele
____ 14. Widow's peak and hitchhiker's thumb
____ 15. Recessive disorder that results from the absence of an enzyme required to break lipids down

Multiple Choice
Identify the choice that best completes the statement or answers the question.

____ 16. According to Figure 12-5, what is the chance that individual A will be afflicted with Huntington's?

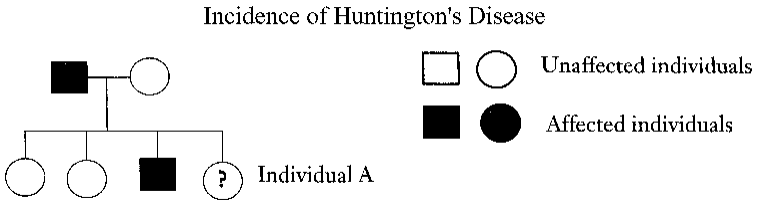


Figure 12-5

a. 25%
b. 100%
c. 50%
d. 75%

____ 17. Which of the following genetic disorders can be detected by karyotyping?
a. Tay-Sachs disease and phenylketonuria
b. Down syndrome
c. hemophilia and cystic fibrosis
d. Klinefelter syndrome and sickle-cell anemia

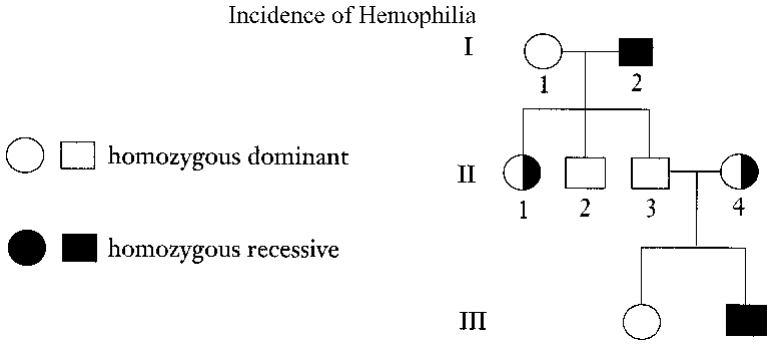


Figure 12-1

____ 18. Refer to Figure 12-1. If individual III-2 marries a person with the same genotype as individual I-1, what is the chance that one of their children will be afflicted with hemophilia?
a. 75%
b. 0%
c. 25%
d. 50%

____ 19. For the trait being followed in the pedigree, individuals II-1 and II-4 in Figure 12-1 can be classified as _____.
a. homozygous dominant
b. homozygous recessive
c. carriers
d. mutants

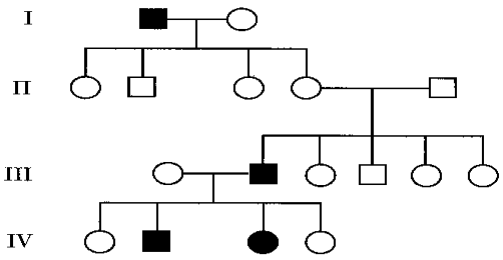


Figure 12-3

____ 20. What is the probable mode of inheritance for the normal trait in Figure 12-3?
a. multiple alleles
b. sex linkage
c. polygenic
d. simple dominant

____ 21. Based on Figure 12-3, what do you know about individual III-1's mother?
a. She was homozygous recessive.
b. She had the trait.
c. She was a carrier.
d. She was homozygous dominant.

____ 22. The reason a fetus afflicted with phenylketonuria is <u>not</u> affected until after birth is that _____.
a. the missing chromosome is compensated for by the mother prior to delivery
b. because the fetus does not breathe, the accumulation of mucus in the lungs is not dangerous
c. prior to birth, the mother's enzyme level prevents accumulation of the dangerous chemical
d. the child is not bruised or cut during development and therefore does not require a blood-clotting factor

____ 23. Following the detection of phenylketonuria or PKU in an infant, the treatment used in order to prevent mental retardation is _____.
a. periodic blood transfusions
b. dietary adjustments
c. physical therapy
d. injection of missing enzymes

____ 24. Cystic fibrosis and Tay-Sachs disease are typical of recessive disorders concentrated in _____.
a. countries with hot, wet climates
b. the United States
c. ethnic groups
d. families with a single child

____ 25. A man heterozygous for blood type A marries a woman heterozygous for blood type B. The chance that their first child will have type O blood is _____.
a. 50%
b. 25%
c. 75%
d. 0%

____ 26. Individuals with Huntington's disease _____.
a. suffer from a form of aneuploidy
b. undergo progressive deterioration of the nervous system
c. must have frequent transfusions because their blood lacks a clotting factor
d. find breathing difficult and suffer frequent lung infections

____ 27. What phenotype is depicted in Figure 12-8?

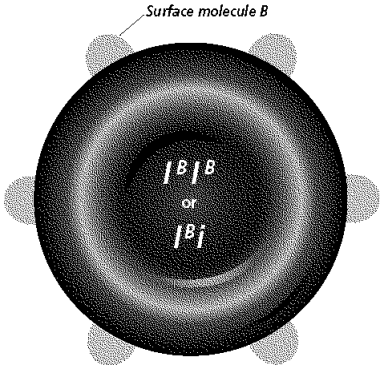


Figure 12-8

a. O
b. AB
c. A
d. B

____ 28. A trait controlled by four alleles is said to have _____.
a. hybridization
b. homologous alleles
c. multiple alleles
d. autosomes

____ 29. A human genetic disorder caused by a dominant gene is _____.
a. cystic fibrosis
b. Huntington's disease
c. Tay-Sachs disease
d. phenylketonuria

____ 30. Examine the graph in Figure 12-4, which illustrates the frequency in types of skin pigmentation in humans. Another human trait that would show a similar inheritance pattern and frequency of distribution is _____.

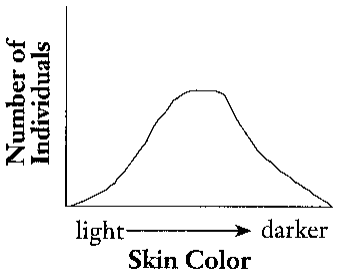


Figure 12-4

a. incidence of cystic fibrosis
b. height
c. number of fingers and toes
d. blood type

____ 31. In Figure 12-7, the trait shown is _____.

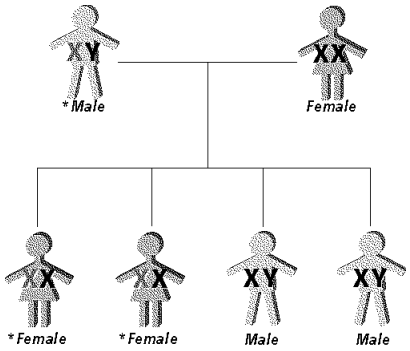


Figure 12-7

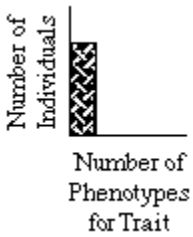
a. Y-linked
b. trisomy
c. not sex-linked
d. X-linked

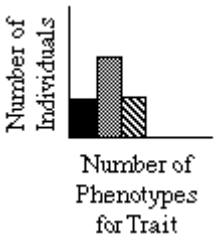
____ 32. Most human genetic disorders are caused by the expression of _____.
a. one dominant allele
b. sex-linked heredity
c. two dominant alleles
d. recessive alleles

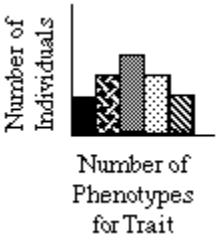
____ 33. Which of the following situations is most usual for a dominant allele that results in severe effects in the offspring?
a. The trait occurs by mutation.
b. Only a single offspring has the trait.
c. Both parents have the trait.
d. none of these

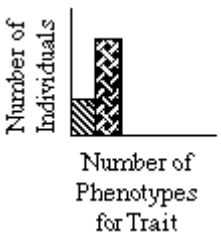
____ 34. Eye color in humans is the result of _____ inheritance.
a. sex-linked
b. polygenic
c. simple dominant
d. multiple allelic

____ 35. Which of the bar graphs shown below represents what the phenotypic frequencies might be for polygenic inheritance?

a.


b.


c.


d.


____ 36. A cross between a white rooster and a black hen results in 100% blue Andalusian offspring. When two of these blue offspring are mated, the probable phenotypic ratio seen in their offspring would be _____.
a. 25% black, 50% blue, 25% white
b. 100% blue
c. 75% black, 25% white
d. 75% blue, 25% white

____ 37. A human genetic defect that results in the failure to metabolize the amino acid phenylalanine is _____.
a. phenylketonuria
b. Down syndrome
c. Turner syndrome
d. cystic fibrosis

____ 38. The blood types A, B, AB, and O are the result of _____ inheritance.
a. polygenic
b. sex-linked
c. simple dominant
d. multiple allelic

____ 39. Because the gene for red-green color blindness is located on the X chromosome, it is normally <u>not</u> possible for a _____.
a. color blind father to pass the gene on to his son
b. carrier mother to pass the gene on to her daughter
c. color blind father to pass the gene on to his daughter
d. carrier mother to pass the gene on to her son

____ 40. In humans, red-green color blindness is _____.
a. caused by a recessive allele
b. inherited in males from their fathers
c. equally common in both sexes
d. produced in males by a heterozygous genotype

____ 41. A child is diagnosed with a rare genetic disease. Neither parent has the disease. How might the child have inherited the disorder?
a. The disorder could occur only as a mutation in the child because neither parent had the disease.
b. The disorder is recessive and carried by both parents.
c. The disorder is dominant and was carried by a parent.
d. The disorder is sex linked and inherited only from the father.

____ 42. Two healthy parents produce a child with the genetic disorder of cystic fibrosis, which is the result of a recessive gene. What would be the best explanation for this inheritance?
a. This is not the result of a genetic disorder.
b. Cystic fibrosis is a chromosomal mutation that occurred during development and is not related to the parental genotypes.
c. Both parents carried the recessive gene for cystic fibrosis.
d. Cystic fibrosis is caused by a mutation in the 21st pair of chromosomes.

____ 43. Which of the following disorders is most common among the Amish and Ashkenazic Jewish populations?
a. Phenylketonuria
b. Cystic fibrosis
c. Tay-Sachs disease
d. Cerebral palsy

____ 44. If a female fruit fly heterozygous for red eyes (X^RX^r) crossed with a white-eyed male (X^rY), what percent of their offspring would have white eyes?
a. 25%
b. 0%
c. 50%
d. 75%

____ 45. The type of inheritance shown when a red-flowering plant is crossed with a white-flowering plant and only pink-flowering plants are produced is _____.
a. codominance
b. incomplete dominance
c. inbreeding
d. polygenic inheritance

==========