

## FRONT

### Unit 7: Genetics Practice Test

- Gregor Mendel concluded that each pea has two units for each trait, and each gamete contains one unit. Mendel's "units" are now referred to as \_\_\_\_\_.
  - genes
  - characters
  - alleles
  - transcription factors
- What is the ratio of phenotypes in the offspring produced by the cross  $Aa \times Aa$ ? Assume complete dominance for the trait.
  - 100% dominance
  - 100% recessive
  - 75% dominant: 25% recessive
  - 50% dominant: 50% recessive
  - 25% dominant: 75% recessive
- According to the Law of Segregation
  - each individual carries a single copy of each "factor"
  - pairs of factors fuse during the formation of gametes
  - pairs of factors separate during the formation of gametes
  - the sex chromosomes of males and females differ
  - there is an independent assortment of non-homologous chromosomes during meiosis
- A recessive gene is one
  - that is not expressed as strongly as a dominant allele
  - whose effect is masked by a dominant allele
  - that appears only in a heterozygote
  - that produces no effect when present in the homozygous condition
- Which of the following statements is FALSE?
  - Individuals with the same phenotype might have different genotypes
  - Matings between individuals with dominant phenotypes cannot produce offspring with recessive phenotypes
  - Matings between individuals with recessive phenotypes usually do not produce offspring with dominant phenotypes
  - All of the above choices are correct
- The physical manifestation of an organism's genes is its
  - environment
  - genotype
  - phenotype
  - genetic code
  - number of chromosomes
- The genetic makeup of an individual is its
  - phenotype
  - sex cells
  - mutation
  - gene pool
  - genotype

8. Cleft chin is an autosomal dominant trait. A man homozygous for the cleft chin marries a woman with a round chin. What proportion of their female progeny will show the trait?
- A) 0%
  - B) 25%
  - C) 50%
  - D) 75%
  - E) 100%
9. Classical albinism results from a recessive allele. Which of the following is the expected offspring from a normally pigmented male with an albino father and an albino wife?
- A) 75% normal; 25% albino
  - B) 75% albino; 25% normal
  - C) 50% normal; 50% albino
  - D) all normal
  - E) all albino
10. In crossing a homozygous recessive with a heterozygote, what is the chance of getting a homozygous recessive phenotype in the F1 generation?
- A) 0%
  - B) 25%
  - C) 50%
  - D) 75%
  - E) 100%
11. If two parents are heterozygous for albinism (an autosomal recessive trait), what is the chance that their fourth child will have a homozygous genotype?
- A) 0%
  - B) 25%
  - C) 50%
  - D) 75%
  - E) 100%
12. Humans possess
- A) 2 pairs of sex chromosomes and 46 pairs of autosomes
  - B) 2 pairs of sex chromosomes and 23 pairs of autosomes
  - C) 1 pair of sex chromosomes and 46 pairs of autosomes
  - D) 1 pair of sex chromosomes and 22 pairs of autosomes
13. A human sperm cell receives autosomes and
- A) exactly the same genetic information as a body cell
  - B) an X chromosome always
  - C) either an X or a Y chromosome
  - D) a Y chromosome always
  - E) both an X and a Y chromosome
14. In humans, the sex of the offspring is determined by the
- A) autosomes carried by the egg cell
  - B) autosomes carried by the sperm cell
  - C) sex chromosome carried by the egg cell
  - D) sex chromosome carried by the sperm cell
  - E) cytoplasm carried by the egg cell
15. Traits controlled by sex-linked recessive genes are expressed more often in males because
- A) males inherit these genes from their fathers
  - B) males always carry two copies of these genes
  - C) all male offspring of a female carrier get the gene
  - D) the male has only one allele for the trait

Practice Test

16. A recessive allele on the X chromosome causes colorblindness. A non-colorblind woman (whose father is colorblind) marries a colorblind man. What is the chance their son will be colorblind?
- A) 0%
  - B) 25%
  - C) 50%
  - D) 75%
  - E) 100%
17. Hemophilia is a sex-linked recessive gene causing a blood disorder. What are the chances that the daughter of a normal man and a heterozygous woman will have hemophilia?
- A) 0%
  - B) 25%
  - C) 50%
  - D) 75%
  - E) 100%
18. A man who carries a harmful sex-linked (on the X chromosome) gene will pass the allele on to
- A) all of his daughters
  - B) half of his daughters
  - C) half of his sons
  - D) all of his sons
  - E) all of his children
19. A type of muscular dystrophy shows sex-linked recessive inheritance. Affected persons usually die by the age of 15-20. Suppose that a boy with the disease lives long enough to marry a woman heterozygous for the trait. If they have a son, what is the probability that he will have the disease?
- A) 25%
  - B) 50%
  - C) 75%
  - D) 100%
  - E) 0%
20. Two people with normal vision have two sons, one colorblind and one normal. If this couple then has six daughters, what percentage of the daughters should have normal color vision?
- A) 25%
  - B) 50%
  - C) 75%
  - D) 100%
  - E) 0%
21. Blood typing is often used as evidence in paternity cases in court. In one case, the mother had blood type B and the child had blood type O. Which of the following blood types could the father NOT have?
- A) A
  - B) B
  - C) AB
  - D) O
  - E) Both choices C and D are correct.

22. In snapdragons, red x white → pink. What is expected for the cross pink x red?  
A) 1/2 red and 1/2 pink  
B) all pink  
C) 1/2 red and 1/2 white  
D) all red  
E) 3/4 red and 1/4 pink
23. In snapdragons, red x white → pink. This pattern of inheritance is explained by  
A) complete dominance  
B) incomplete dominance  
C) hybridization  
D) multiple alleles
24. Codominance occurs when  
A) both of the alleles in a heterozygote are expressed phenotypically in an individual  
B) expression of 2 different alleles alternates from one generation to the next  
C) a heterozygote expresses an intermediate phenotype  
D) offspring exhibit several different phenotypic expressions of a single trait  
E) None of the above choices is correct
25. When the expression of a trait is influenced by the action of many genes, the pattern of inheritance is called  
A) complete dominance  
B) incomplete dominance  
C) multiple allele  
D) discontinuous variation  
E) polygenic inheritance
26. Human skin color is the result of  
A) codominance  
B) simple dominance  
C) sex-linked recessive inheritance  
D) polygenic inheritance
27. If an individual who is homozygous for type B blood marries a heterozygous type A individual, what is the chance that their first child will have type AB blood?  
A) 0%  
B) 25%  
C) 50%  
D) 75%  
E) 100%
28. Pedigree analysis  
A) documents transmission of a genetic characteristic over two or more generations.  
B) reveals whether a trait is dominant or recessive  
C) involves procedures of molecular biology  
D) A & B  
E) A, B and C
29. The failure of chromosomes to segregate properly during meiosis is called  
A) nondisjunction  
B) translocation  
C) replication  
D) inversion  
E) independent assortment
30. A disorder caused by non-disjunction of chromosome 21 resulting in a trisomy 21 child is  
A) Cystic fibrosis  
B) Down syndrome  
C) Hemophilia  
D) Color blindness