

Skills Worksheet

Test Prep Pretest

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

- _____ 1. *Pisum sativum*, the garden pea, is a good subject to use in studying heredity for all of the following reasons *except*
- Several varieties of *Pisum sativum* are available that differ in easily distinguishable traits.
 - Pisum sativum* is a small, easy-to-grow plant.
 - Pisum sativum* matures quickly and produces a large number of offspring.
 - A *Pisum sativum* plant with male reproductive parts must cross-pollinate with a plant having female reproductive parts for reproduction to take place.
- _____ 2. Step 1 of Mendel's garden pea experiment, allowing each variety of garden pea to self-pollinate for several generations, produced the
- F₁ generation.
 - F₂ generation.
 - P generation.
 - P₂ generation.
- _____ 3. In the F₂ generation in Mendel's experiments, the ratio of dominant to recessive phenotypes was
- 1:3.
 - 1:2.
 - 2:1.
 - 3:1.
- _____ 4. The trait that was expressed in the F₁ generation in Mendel's experiment is considered
- recessive.
 - dominant.
 - second filial.
 - parental.
- _____ 5. Mendel's law of segregation states that
- pairs of alleles are dependent on one another when separation occurs during gamete formation.
 - pairs of alleles separate independently of one another after gamete formation.
 - each pair of alleles remains together when gametes are formed.
 - the two alleles for a gene separate when gametes are formed.
- _____ 6. A series of genetic crosses results in 787 long-stemmed plants and 277 short-stemmed plants. The probability that you will obtain short-stemmed plants if you repeat this experiment is
- $\frac{277}{1,064}$.
 - $\frac{277}{787}$.
 - $\frac{787}{277}$.
 - $\frac{787}{1,064}$.

Test Prep Pretest *continued*

- _____ 7. Crossing a snapdragon that has red flowers with one that has white flowers produces a snapdragon that has pink flowers. The trait for flower color exhibits
 a. multiple alleles. c. incomplete dominance.
 b. complete dominance. d. codominance.
- _____ 8. Which of the following is *not* considered a simple Mendelian inheritance pattern?
 a. recessive/dominant traits c. polygenic inheritance
 b. law of segregation d. law of independent assortment
- _____ 9. On which of the following chromosomes would a sex-linked gene more often be found in humans?
 a. X c. O
 b. Y d. YO
- _____ 10. The human blood groups are an example of
 a. homozygous alleles. c. incomplete dominance.
 b. codominance. d. Both (a) and (c)

Questions 11 and 12 refer to the figure at right, which represents a monohybrid cross between two individuals that are heterozygous for a trait.

- _____ 11. If the resulting phenotypic ratio is 3:1, the missing parental allele is
 a. *d*. c. *Dd*.
 b. *D*. d. *DD*.
- _____ 12. The two unknown genotypes in the offspring are
 a. *DD* and *dd*. c. *dd* and *DD*.
 b. *Dd* and *Dd*. d. *Dd* and *dd*.

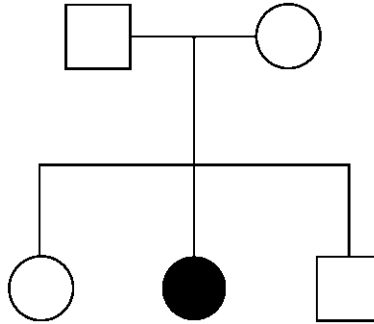
	<i>D</i>	<i>d</i>
<i>D</i>	<i>DD</i>	<i>Dd</i>
<i>d</i>	<i>Dd</i>	<i>dd</i>

- _____ 13. Which of the following summarizes one of Mendel’s major hypotheses developed from his studies of garden peas?
 a. All of an individual’s alleles make up its genotype.
 b. Traits that are intermediate between two parents are caused by genes that are incompletely dominant.
 c. There are alternative versions of genes, which are now called alleles.
 d. When two dominant alleles are expressed together, they are called codominant.
- _____ 14. Which of the following is an example of a testcross?
 a. *YY* × *YY*
 b. *YY* × *yy*
 c. *Yy* × *Yy*
 d. All of the above

Test Prep Pretest *continued*

- _____ 15. What is the relationship between genotype and phenotype?
- Phenotype determines a genotype.
 - Genotype produces a phenotype.
 - Genotype and phenotype give rise to alleles.
 - None of the above

Question 16 refers to the figure below, which shows the inheritance of sickle cell anemia in a family.



- _____ 16. Which of the following is true based on the information provided in the pedigree?
- Both parents have sickle cell anemia.
 - Both parents carry an allele for sickle cell anemia.
 - Sickle cell anemia is caused by a dominant allele.
 - All three children are carriers of a defective gene that causes sickle cell anemia.

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

17. The investigator whose studies formed the basis of modern genetics is _____.
18. The _____, or detectable trait, of an individual is determined by the alleles that code for traits. The set of alleles that an individual has is called its _____.
19. A cross between a pea plant that is true-breeding for green pod color and one that is true-breeding for yellow pod color is an example of a(n) _____ cross.

Test Prep Pretest *continued*

20. Characteristics such as eye color, height, weight, and hair and skin color are examples of _____ because several genes act together to influence a character.

21. Genes that are close together on the same chromosome are said to be _____.

Read each question, and write your answer in the space provided.

22. What approximate ratio of plants expressing contrasting traits did Mendel calculate in his F₂ generation of garden peas? What steps did he take to calculate this ratio?

23. Name Mendel's two major laws of heredity.

24. Give an example of how the environment might influence gene expression.

25. Describe the inheritance of sex-linked genes.
