

Genetics pre-/posttest

1. Mendel's law of _____ states that some alleles are dominant over other alleles.
(LS3.A; Cause and Effect)
 - a. independent assortment
 - b. dominance**
 - c. segregation
 - d. recession
2. If an offspring is said to be homozygous recessive, which of the following could be its genotype?
(LS3.A; Patterns)
 - a. RrSs
 - b. TTss
 - c. Tt
 - d. ss**
3. If you wanted to determine the phenotype of an organism, what procedure would you follow?
(LS1.B; Patterns)
 - a. DNA sequence the parents
 - b. DNA fingerprint the organism
 - c. look at the physical characteristics of the organism**
 - d. do a dihybrid cross
4. Who is considered the father of genetics?
(LS3.A)
 - a. Charles Darwin
 - b. Gregor Mendel**
 - c. James Watson
 - d. Francis Crick
5. If a black guinea pig (Bb) were crossed with a white guinea pig (bb) what would be the resulting phenotypic ratio?
(LS3; Patterns; Cause and Effect)
 - a. 0:1 black to white
 - b. 1:0 black to white
 - c. 1:1 black to white**
 - d. 3:1 black to white
6. What is the resulting offspring of different species or varieties called?
(LS3; Patterns; Cause and Effect)
 - a. hybrid**
 - b. purebred

- c. dominant
- d. recessive

7. In garden peas, purple flowers (P) are dominant to white (p) flowers, and tall plants (T) are dominant to short plants (t). If a purple tall plant (PpTt) is crossed with a white short plant (pptt), what is the resulting phenotypic ratio?

(LS3; Patterns; Cause and Effect)

- a. **1:1:1:1 purple tall to purple short to white tall to white short**
- b. 3:2 purple tall to purple short
- c. 9:3:3:1 purple tall to purple short to white tall to white short
- d. All purple tall

8. Which of the following describes an organism that has two different alleles for a trait?

(LS3; Patterns)

- a. **heterozygous**
- b. homozygous
- c. dominant
- d. recessive

9. Explain how the traits of the parents are related to the traits of the offspring.

(LS3; Patterns; Cause and Effect)

Answers may vary, but may be similar to the following: The traits of the offspring are the result of combining the chromosomes inherited from the parents. The traits of the offspring depend on whether the dominant or recessive alleles are passed from parents to offspring.

10. Explain how an offspring may have a trait that is not visible in the parents.

(LS3; Patterns; Cause and Effect)

Answers may vary, but may be similar to the following: If the parents are heterozygous, then each parent has both the dominant and recessive alleles. The dominant allele would be expressed in the parents' phenotypes, but they could pass on the recessive allele to the offspring. If both parents pass on the recessive allele, then the recessive trait would be expressed in the phenotype of the offspring. The offspring's trait would look different from the parents' trait.