

### 1. Formative Assessment

Let students answer the following multiple choice test questions:

1. In a monohybrid cross between two heterozygous individuals ( $Rr \times Rr$ ), what is the expected genotypic ratio of the offspring?
  - A) 1:1
  - B) 1:2:1
  - C) 3:1
  - D) 9:3:3:1
2. What is the phenotype of an organism with the genotype  $AaBb$ ?
  - A) Homozygous dominant
  - B) Homozygous recessive
  - C) Heterozygous
  - D) None of the above
3. In a dihybrid cross between two individuals heterozygous for both traits ( $RrYy \times RrYy$ ), what is the expected phenotypic ratio of the offspring?
  - A) 9:3:3:1
  - B) 3:1
  - C) 1:2:1
  - D) 1:1
4. If a trait is controlled by a single gene with two alleles, and one allele is completely dominant over the other, what will be the phenotype of a heterozygous individual?
  - A) Same as the homozygous dominant individual
  - B) Same as the homozygous recessive individual
  - C) A blend of both dominant and recessive traits
  - D) None of the above
5. What is the genotype of an individual with the phenotype of a recessive trait?
  - A) Homozygous dominant
  - B) Homozygous recessive
  - C) Heterozygous
  - D) Cannot be determined
6. If a pea plant with yellow seeds ( $YY$ ) is crossed with a pea plant with green seeds ( $yy$ ), what will be the genotype of the F1 generation?
  - A)  $YY$
  - B)  $Yy$
  - C)  $yy$
  - D) Both  $YY$  and  $Yy$
7. In a monohybrid cross between two heterozygous individuals ( $Ss \times Ss$ ), what is the probability of producing a homozygous recessive offspring?
  - A)  $1/4$
  - B)  $1/2$
  - C)  $1/3$
  - D)  $1/8$
8. In a dihybrid cross between two individuals heterozygous for both traits ( $RrYy \times RrYy$ ), what is the probability of producing an offspring with the genotype  $rrYY$ ?
  - A)  $1/16$
  - B)  $1/8$
  - C)  $1/4$
  - D)  $1/2$
9. If a trait is controlled by a single gene with two alleles, and both alleles are expressed equally in the heterozygous condition, what kind of inheritance pattern does it exhibit?
  - A) Incomplete dominance
  - B) Codominance
  - C) Multiple alleles
  - D) Polygenic inheritance
10. What is the expected genotypic ratio of the offspring in a dihybrid cross between two individuals heterozygous for both traits ( $RrYy \times RrYy$ )?
  - A) 1:2:1
  - B) 1:1:1:1
  - C) 9:3:3:1
  - D) 3:1