

Chapter – 4 | Principles of Inheritance and Variation

QUIZ
PART-04

1. A dihybrid cross involves the study of inheritance of:

A. One gene
B. Two genes
C. Three genes
D. Multiple genes (B)

Explanation : A dihybrid cross studies the inheritance of two pairs of contrasting traits.

2. In Mendel's dihybrid cross, yellow seed colour is dominant over:

A. Round seed
B. Green seed
C. Wrinkled seed
D. Tall plant (B)

Explanation : In Mendel's pea experiment, yellow seed colour was dominant over green seed colour.

3. The F_1 generation obtained by crossing yellow round seeds with green wrinkled seeds was:

A. Green wrinkled
B. Yellow wrinkled
C. Round yellow
D. Round green (C)

Explanation : The F_1 generation showed round yellow seeds because round and yellow traits are dominant.

4. The phenotypic ratio in the F_2 generation of a dihybrid cross is:

A. 3 : 1
B. 1 : 2 : 1
C. 9 : 3 : 3 : 1
D. 1 : 1 (C)

Explanation : A dihybrid cross produces the phenotypic ratio of 9 round yellow : 3 round green : 3 wrinkled yellow : 1 wrinkled green.

5. The law of independent assortment states that:

A. Genes always remain together
B. One pair of traits segregates independently of another pair
C. Alleles never separate
D. Traits always blend together (B)

Explanation : According to this law, segregation of one pair of traits is independent of another pair during inheritance.

6. The genotypic ratio in a dihybrid cross is:

A. 9 : 3 : 3 : 1
B. 1 : 2 : 1
C. 1 : 2 : 2 : 4 : 1 : 2 : 1 : 2 : 1
D. 3 : 1 (C)

Explanation : The F_2 generation of a dihybrid cross shows the genotypic ratio 1:2:2:4:1:2:1:2:1.

7. The law of independent assortment is based on:

A. Monohybrid cross
B. Dihybrid cross
C. Mutation
D. Test cross (B)

Explanation : Mendel proposed the law of independent assortment based on his dihybrid cross experiments.

8. During linkage, the two genes show:

A. Independent segregation
B. No independent segregation
C. Complete mutation
D. Random dominance (B)

Explanation : In linkage, genes are inherited together and do not show independent segregation.

9. In Mendel's dihybrid cross, round seed shape is dominant over:

A. Yellow seed colour
B. Green seed colour
C. Wrinkled seed shape
D. Tallness (C)

Explanation : Round seed shape is a dominant trait, while wrinkled seed shape is recessive.

10. The F_2 phenotypic ratio of round yellow, round green, wrinkled yellow and wrinkled green seeds is:

A. 1 : 1 : 1 : 1
B. 9 : 3 : 3 : 1
C. 3 : 1 : 3 : 1
D. 1 : 2 : 2 : 4 (B)

Explanation : Independent assortment in a dihybrid cross produces the characteristic 9:3:3:1 phenotypic ratio.