

Class 10 ICSE Biology

Topic: Genetics Terms Related and Monohybrid Cross

1. A cross between two organisms differing in only one trait is called:

a) Dihybrid cross b) Monohybrid cross c) Test cross d) Back cross

2. In a monohybrid cross between a heterozygous tall (Tt) and a short (tt) pea plant, the ratio of tall to short plants in F₁ generation will be:

a) 1:1 b) 3:1 c) 2:1 d) 1:3

3. In Mendel's experiment, if tall (T) is dominant over dwarf (t), what will be the phenotype ratio of the offspring produced by crossing Tt × Tt?

a) 3 Tall : 1 Dwarf b) 1 Tall : 3 Dwarf c) 1 Tall : 1 Dwarf d) All Tall

4. If two heterozygous parents (Tt) are crossed, what is the probability of obtaining a homozygous

recessive (tt) individual?

a) $1/2$ b) $1/3$ c) $1/4$ d) $3/4$

5. Which of the following genotypes will express a recessive trait?

a) TT b) Tt c) tt d) Both a and c

6. How many types of gametes will be formed by a homozygous tall plant (TT)?

a) 1 b) 2 c) 3 d) 4

7. A pea plant has genotype Tt. What gametes will it form?

a) Only T b) Only t c) T and t d) TT and tt

8. In a monohybrid cross, out of 160 pea plants, how many would you expect to be dwarf in F₂ generation?

a) 20 b) 40 c) 60 d) 120

9. If a monohybrid cross between two heterozygous parents results in 100 offspring, how many are expected to be homozygous dominant?

a) 25 b) 50 c) 75 d) 100

10. Which term describes the physical expression of a trait?

- a) Genotype b) Phenotype c) Allele d) Locus

11. A researcher crossed a pure tall pea plant (TT) with a pure dwarf one (tt). In the F₁ generation, all were tall. If 480 seeds from the F₂ generation were planted and 10% failed to germinate, how many dwarf plants would be observed among the germinated ones?

- a) 108 b) 120 c) 144 d) 160

12. In a controlled experiment, a total of 600 plants were grown from a monohybrid cross between two heterozygous plants. If 10% of the total plants were excluded due to mutations not related to height, how many plants would show the heterozygous tall trait?

- a) 270 b) 300 c) 330 d) 360

13. A school conducted a genetics experiment by planting seeds from a Tt × Tt cross. Out of 800 plants, only 75% survived till flowering. How many of the surviving plants would you expect to be phenotypically tall?

- a) 450 b) 480 c) 500 d) 600

14. In an agricultural experiment, a total of 1200 plants were generated from a monohybrid cross. If all homozygous recessive plants showed a disease symptom, how many of the remaining plants would be healthy and tall?

- a) 600 b) 750 c) 900 d) 1000

15. A scientist cultivated 900 plants using monohybrid inheritance principles. If $\frac{1}{3}$ of the heterozygous tall plants are used for seed production next season, how many seed-producing plants would be heterozygous tall?

- a) 100 b) 150 c) 200 d) 300

16. In a genetics experiment, the phenotypic ratio of tall to dwarf plants in F₂ generation was recorded as 3:1. If the total number of plants observed was 1600, how many plants were either homozygous or heterozygous tall?

- a) 400 b) 1200 c) 800 d) 1600

17. A class performed a $Tt \times Tt$ cross and found the ratio of $TT : Tt : tt$ to be 1:2:1. If the total number of heterozygous plants was 500, how many total plants were used in the experiment?

- a) 750 b) 1000 c) 1500 d) 2000

18. A gardener observed that among the 360 plants grown from a monohybrid cross, only 25% were not flowering due to a recessive trait. The remaining plants flowered normally. How many plants were tall and flowering?

- a) 180 b) 240 c) 270 d) 300

19. In a seed bank trial, 1000 seeds were sown, and only 85% germinated. Assuming the cross was $Tt \times Tt$, and all germinated plants followed expected Mendelian phenotypic ratios, how many plants were genetically heterozygous?

- a) 212 b) 360 c) 425 d) 510

20. In a cross between $Tt \times Tt$, what is the chance that a randomly selected plant is tall but not homozygous?

- a) $1/4$ b) $1/2$ c) $1/3$ d) $2/3$

21. Out of four offspring from a $Tt \times Tt$ cross, what is the probability that exactly two will be dwarf?

- a) $3/8$ b) $9/16$ c) $6/16$ d) $1/4$

22. In a family of three children, what is the probability that all three inherited the dominant

allele (T) if both parents are Tt?

a) $1/4$ b) $1/8$ c) $27/64$ d) $9/64$

23. _____ are the alternative forms of a gene that occupy the same position on homologous chromosomes.

24. The trait that is expressed in the heterozygous condition is known as the _____ trait.

25. The actual set of genes an organism possesses is its _____.

26. The visible characteristics of an organism are referred to as its _____.

27. In Mendel's experiments, the plant used was _____.

28. A cross used to determine the genotype of an individual showing the dominant phenotype is called a _____.

29. _____ is the process of the fusion of male and female gametes.

30. The units of heredity that are passed from parents to offspring are called _____.

31. The gene that masks the effect of another gene is called _____.

32. The masked gene in a heterozygous condition is termed as _____.

33. Tt is an example of _____ genotype.

34. Arrange and rewrite the following phenotypes in the expected ratio of a monohybrid cross between two heterozygous tall plants:

Tall, Dwarf, Tall, Tall

35. Arrange and rewrite the correct sequence of terms used in a monohybrid cross:

a) Offspring b) Gametes c) Parents d)

Punnett square

36. Arrange and rewrite the genotypes in increasing order of dominance:

tt, Tt, TT

37. Arrange and rewrite the sequence of stages involved in Mendel's monohybrid experiment:

a) F₂ generation b) Parental generation c) Gamete formation d) F₁ generation

38. One-word answer: The physical trait expressed in an organism.

39. One-word answer: The pair of alleles present in an individual.

40. One-word answer: The cross between two individuals differing in a single pair of contrasting traits.

41. One-word answer: A plant with genotype TT is said to be _____.

42. One-word answer: The diagram used to determine the probability of inheritance.

43. One-word answer: A trait which is expressed in F₁ generation.

44. One-word answer: A trait which remains hidden in F₁ but appears in F₂ generation.

45. One-word answer: Tallness and dwarfness are examples of _____.

46. One-word answer: The basic unit of inheritance.

47. One-word answer: Gregor Mendel is known as the Father of _____.

48. One-word answer: The F1 plants from a $TT \times tt$ cross will all be _____ tall.

49. One-word answer: A genotype with two identical alleles.

50. One-word answer: A genotype with two different alleles.

51. One-word answer: The first generation from parental cross is called _____ generation.

52. One-word answer: The generation produced after self-crossing the F1 generation.

53. One-word answer: The law that states that alleles segregate independently during gamete formation.

54. One-word answer: A visible trait governed by a pair of alleles.

55. One-word answer: Organism that always breeds true for a trait.

56. One-word answer: When neither allele is completely dominant over the other.
57. One-word answer: A pair of contrasting traits is called a _____.
58. One-word answer: The recessive trait reappears in which generation?
59. One-word answer: F₂ generation in a monohybrid cross shows how many phenotypes?
60. One-word answer: The number of genotypes produced in a $Tt \times Tt$ cross.
61. One-word answer: The law explaining the separation of allele pairs during gamete formation.
62. One-word answer: Mendel worked on this plant.
63. One-word answer: An organism with one dominant and one recessive allele.
64. One-word answer: Allele responsible for expression in both homozygous and heterozygous forms.

65. One-word answer: Ratio of phenotypes in F₂ generation of a monohybrid cross.