Chapter 01: Genetic Basis of Inheritance

1. The four gametes produced by AaBb – AB, Ab, aB, ab. Therefore percentage of ‘ab’ gamete produced by ‘AaBb’ parent will be 25% .

3. Dwarf plants of F₂ generation of a monohybrid cross are homozygous dwarf and hence form pure line parents or breed true for dwarfness.

5. Parents: Tt × Tt

Gametes: \[ \begin{array}{c|cc}
\text{T} & \text{T} & \text{t} \\
\text{t} & \text{T} & \text{t} \\
\end{array} \]

\[ \begin{array}{c|cc}
\text{TT} & \text{Tt} \\
\text{Tt} & \text{tt} \\
\end{array} \]

3/4th of the offsprings appear dominant (TT, Tt, Tt)

6. In F₂ generation, Mendel got tall and dwarf plants in approximately 3:1 ratio (here ratio is 2.84:1)

10. Test cross is a back cross but back cross is not necessarily a test cross.

11. In pea flower, the stamens and carpels are enclosed in the innermost two petals that are appressed together forming a boat-shaped structure called Carina.

12. A dominant allele expresses itself in hybrids.

13. F₂ progeny of monohybrid cross shows two phenotypes and three genotypes, viz. homozygous dominant, heterozygous dominant and homozygous recessive. The cross between F₁ progeny obtained from homozygous tall (TT) and homozygous dwarf (tt) plant will yield (three types of genotypes) homozygous tall (TT), heterozygous tall (Tt) and homozygous dwarf (tt). The two phenotypes will be tall and dwarf.