From the monohybrid cross, we can infer:

1. The trait that is expressed in F1 generation is called dominant trait.
2. The trait that is not expressed in F1 generation but appeared in F2 generation is called recessive trait.
3. In F2 generation dominant and recessive trait gives a ratio of 3:1
4. Mendel's First Law or Law of segregation: the alleles of the parental pair separate or segregate from each other and only one allele is transmitted to a gamete.

The segregation of alleles is a random process and so there is a 50 per cent chance of a gamete containing either allele.

Punnett Square: A British geneticist, Reginald C. Punnett, developed it. It is a graphical representation to calculate the probability of all possible genotypes of offspring in a genetic cross.

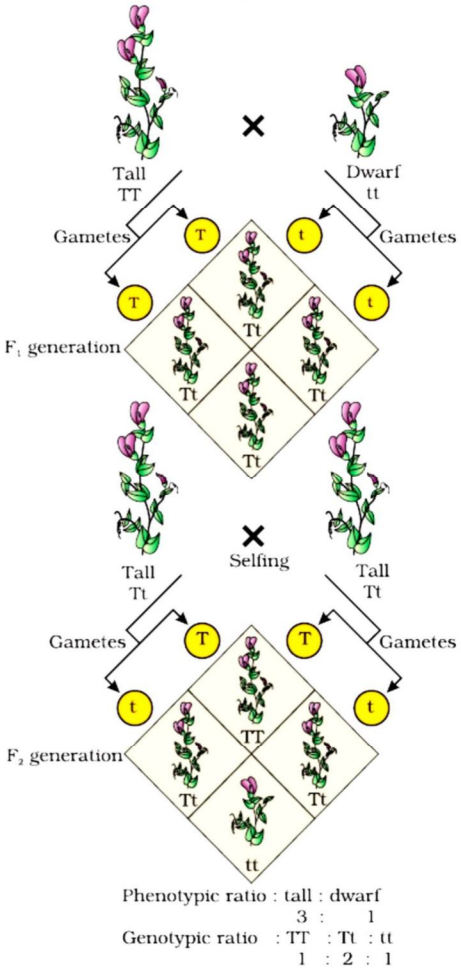

Figure 1 Shwing Punnet square

From the Punnet square, we can easily calculate phenotypic and genotypic ratios.

Phenotypic ratio: tall : dwarf

3 : 1

Genotypic ratio: pure tall : hybrid tall : pure dwarf

1 : 2 : dwarf

Test cross: A cross in which an organism showing a phenotype whose genotype is to be determined is crossed with the recessive parent. The progenies of such a cross can easily be analysed to predict the genotype of the test organism. Figure 2 shows the results of typical test cross where violet colour flower (W) is dominant over white colour flower (w).

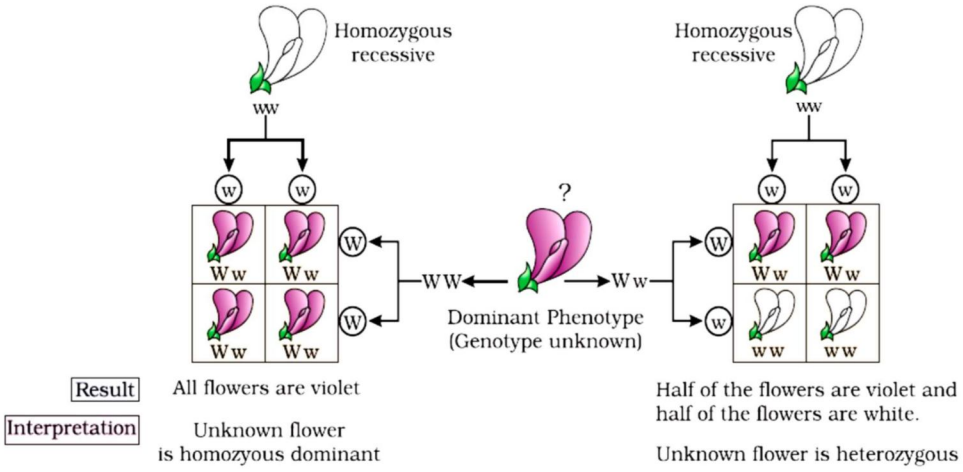

Figure 2 A test cross