

NCERT QUESTIONS WITH SOLUTIONS

1. A Mendelian experiment consisted of breeding tall pea plants bearing violet flowers with short pea plants bearing white flowers. The progeny all bears violet flowers, but almost half of them were short. This suggests that the genetic make-up of the tall parent can be depicted as:

- (1) TTWW (2) TTww
(3) TtWW (4) TtWw

Ans. (3) TtWW

2. Outline a project which aims to find the dominant coat colour in dogs.

Observation table

The area visited	Number of grey colour dogs	Number of black/brown dogs	Number of white dogs
A ____			
B ____			
C ____			
D ____			
Total			

Ans. Project: To find out the dominant coat colour in dogs.

Material required: Notebook, pencil.

Procedure: Observe different colour of pet dogs kept by your friends and note their different coat colour.

You may be able to find different coat colours such as, grey, white, black, brown, etc. Note your reading in the observation table.

Make a survey of different populations to determine the frequency of different coat colours in dogs. Find the percentage distribution of each coat type, out of the total number of dogs studied for the coat colour.

Total number of dogs studied = _____

% of grey dogs = _____

% of Black/brown dogs = _____

% of White dogs = _____

Conclusion: Draw conclusion on the basis of your data collected.

Let us assume in dogs, the coat/skin colour grey is found in more numbers, while black/brown are in less number.

In dogs, the gene for the coat colour is present on 'X' chromosomes, in dogs, for the recessive colour to express, both the 'X' chromosomes must carry the genes for the recessive coat colour which is possible in less number. Thus black/brown colour is a recessive character for coat colour in dogs, the dominant colour (with high % of individuals) can express both in homozygous and heterozygous form in dogs. Therefore, dominant coat colour in dogs is grey.

NCERT Basics : Class 10

3. How is the equal genetic contribution of male and female parents ensured in the progeny?

Ans. Genetically organisms are of two types:

(i) Haploid: They have single set of chromosomes, where each chromosome is represented singly. As the chromosomes are the bearer of genes so haploids have single set of genes. A single gene determines the expression of character.

(ii) Diploid: They have two set of homologous chromosomes, where the chromosome occurs in pair, one maternal contributed by the mother through her ovum and the second chromosome of the pair is contributed by the male parent through his sperm.

The resultant cell zygote produces by the fusion of male and female gametes have two sets of chromosomes, each set contributed by each parent. In diploids a character is controlled by two genes factors. Both the father and mother contribute practically equal amount of genetic material to the child. It means that each trait can be influenced by both paternal and maternal DNA.