MONOHYBRID CROSS PROBLEMS

1. In a certain plant, yellow fruit, Y, is dominant to white fruit, y. A heterozygous plant with yellow fruit is crossed with a plant with white fruit. Determine the probable genotypic and phenotypic ratios resulting from this cross.

2. Determine the probable genotypic and phenotypic ratios expected from crossing two heterozygous plants of Problem 1.

3. Assume that brown eyes is dominant to blue eyes. A father who is heterozygous brown eyed and a heterozygous brown eyed mother have children.
   A) What are genotypes and phenotypes of the offspring?
   B) What is the probability of them having a blue eyed child?

4. In cats the allele for short hair is dominant over the allele for long hair. A short haired male and long haired female have kittens. Eight kittens have short hair and 3 have long hair.
   A) What are genotypes of the parents?
   B) What is the expected ratio of short to long haired cats?
   C) What is the actual ratio in this problem?

5. A man and his wife are both heterozygous for brown eyes. They have six children all of whom have blue eyes.
   A) How is this explained?
   B) What are the chances that their next child will have brown eyes?
   C) What are the chances that their next child will have blue eyes?

DIHYBRID CROSS PROBLEMS

1. In pea plants, tallness (T) is dominant to shortness (t) and red flower color (R) is dominant to white (r). Two plants, both heterozygous for both genes, are crossed. What is the phenotypic ratio of the F1?

2. In horses, black coat color is dominant to chestnut coat color and a trotting gait is dominant to pacing. If a homozygous black pacer is mated to a homozygous chestnut trotter, what will be the phenotypes and genotypes of the F 1? Show the phenotypic ratio of the F2.

3. In guinea pigs, black coat color is dominant to albino. Rough coat is dominant to smooth coat. A black smooth guinea pig was mated with an albino rough guinea pig. Their offspring were black rough and black smooth. If these were the only types produced over a period of years in a number of matings, what was the probable genotype of each parent?

TEST CROSS PROBLEMS

1. If you were a pea farmer and you had both tall and dwarf pea plants but you wanted a pure breeding strain of tall plants how would you do it? (Tall plants are dominant to dwarf ones.)

2. In some dogs the allele for barking is dominant to the allele for non barking. How would a breeder get a strain of pure breeding barkers? Assume he has males and females of both types.

3. In cattle, black coat color is dominant to white coat color. A farmer has a black male of undetermined genotype. How can the farmer determine the genotype of the male?