Monohybrid Practice Problems

Show Punnett Square, give Genotype AND Phenotype for each on your own paper!

1. In humans brown eyes are dominant over blue eyes. What type of offspring would you expect if you crossed a heterozygous brown eyed person to a heterozygous brown eyed person?

2. A widow's peak hairline is dominant to straight hairline. Cross a heterozygous widow's peak hairline person to a straight hairline person.

3. In humans premature gray hair is dominant over normal hair coloring. Cross a homozygous premature gray haired person to a homozygous normal haired person.

4. In humans tongue rolling is dominant to non-tongue rolling. What would be the expected type of offspring if a homozygous tongue roller was crossed to a heterozygous tongue roller?

5. Brown hair is dominant over light colored hair. Cross two light haired people.

6. In a certain plant yellow fruit is dominant to white fruit. A heterozygous plant with yellow fruit is crossed with a plant with white fruit. Determine the probable offspring.

7. In a certain animal, black fur is dominant to white fur. Determine the possible offspring from crosses between:

    a. Homozygous black x white
    b. Heterozygous black x heterozygous black

8. In garden peas, round peas are dominant to wrinkled peas. If you crossed a homozygous dominant and homozygous recessive what would be the genotype and phenotype of the offspring?

9. In corn, normal kernels are dominant to waxy kernels. If you crossed a waxy kernel plant to a heterozygous normal plant what type of seeds would be produced?

10. Tall plants are dominant to short plants in the garden pea plant. Cross a heterozygous tall plant to a heterozygous tall plant.

Monohybrid Cross Problems 2

For each of the following complete a Punnett square and answer the question using your own paper.

1. A Tall plant (T) is dominant to short plant (t). If all offspring of a cross are heterozygous, what were the genotypes of the parents?

2. A round seeded plant (R) is dominant to a wrinkled seeded plant (r). What parental genotypes will produce offspring that are 50% homozygous dominant and 50% heterozygous?

3. A homozygous round seeded plant is crossed with a homozygous wrinkled seeded plant. What percentage of the offspring will also be homozygous?

4. In pea plants purple flowers are dominant to white flowers. What parental genotypes would produce offspring that are all heterozygous for the purple trait?

5. A white flowered plant is crossed with a plant that is heterozygous for the trait. What percentage of the offspring will have purple flowers?

6. If out of 100 offspring 74 are purple flowered and 26 are white, what were the probable genotypes AND phenotypes of the parents?

7. What are the parental genotypes needed to produce 100% white flowers?

8. In guinea pigs, the allele for short hair is dominant. If all the guinea pigs are born short haired what are the possible genotypes of the parents? (There are two possible combinations.)

9. If a second cross is made using these offspring and results are ¾ short haired while ¼ are long haired can you now determine the exact genotypes of the parents and if so what are they?

10. Two short haired guinea pigs are mated several times. Out of 100 offspring, 50 of them have long hair. What are the probable genotypes of the parents?

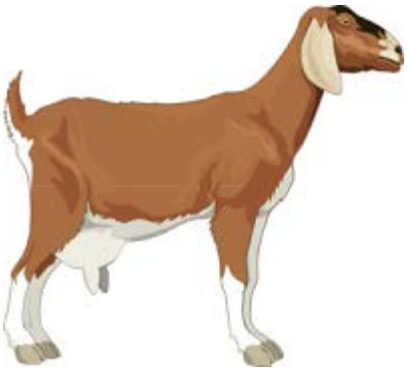
Monohybrid Cross Problems 3

For each of the following complete a Punnett square and answer the question using your own paper.

1. A tall plant of unknown genotype is test-crossed (meaning it is crossed with a recessive tt plant). Of the offspring, 869 are dwarf and 912 are tall. What is the genotype of the unknown parent, is it TT or Tt? Show the cross to prove it.

2. In humans, tongue rolling is a dominant trait, those with the recessive condition cannot roll their tongues. Bob can roll his tongue, but his mother could not. He is married to Sally, who cannot roll her tongue. What is the probability that their first born child will not be able to roll his tongue?

3. In goats, a recessive gene causes the goats to "faint" when they are startled. A farmer breeds two goats (that have never fainted) and their first offspring faints two days after its birth. What must the parent's genotypes have been? Show the cross to prove it.



4. What parent genotypes are needed to result in 100% fainting goats?

5. What parent genotypes will result in ¼ of offspring being fainting goats?

6. In guinnea pigs, black eyes are dominant to red eyes. A male guinnea pig that is heterozygous is crossed with a female that is eyed. What are the expected phenotypes of their offspring and in what proportion?

7. If out of 100 offspring 52 have red eyes and 48 have brown eyes, what are the probable genotypes AND phenotypes of the parents?

8. What is the genotype of the parent needed to produce 75% black eyed offspring when crossed with a heterozygous black eyed parent?