

Practice problems: Monohybrid Cross

FOR ALL PROBLEMS, CREATE A **PUNNET SQUARE** AND GIVE THE **PHENOTYPE AND GENOTYPE RATIO**

Use a Separate piece of paper or the back of this paper to complete your problems.

1. In pea plants, the allele for tallness is dominant (T) and shortness (t) is recessive. A homozygous dominant (TT) is cross with a homozygous recessive (tt).
2. A heterozygous tall plant is crossed with another heterozygous tall plant.
3. A heterozygous tall plant and a short plant are crossed with each other.
4. Yellow pea pods (Y) are dominant over green pods (y). A heterozygote is crossed with a homozygous dominant plant.
5. A homozygous cream colored mouse (dd) is crossed with a heterozygous (Dd) dark mouse.
 - a. What are the odds that this couple will have a cream colored baby?
 - b. What are the odds of a dark mouse?
6. In sheep, white is due to a dominant gene (W), black is due to its recessive allele (w). A white ewe mated to a white ram produces a black lamb. How does this happen? What are the genotype and phenotype ratios?
7. The polled (hornless) condition (P) is dominant over horned (p). A certain polled bull is crossed to 3 cows. With cow A, which is horned, a polled cow is produced; With cow B, also horned, a horned cow is produced; with cow C, with is polled, horned cow is produced. What are the genotypes of the three calves and the four parents?
8. An albino is a person with no pigmentation in his skin, eyes or hair. Normal pigmentation is (A) is dominant over albino (a). A normal pigmented man (whose mother was albino) marries a homozygous normal woman. What would the expected appearances of the children be?
9. If the man in problem #8 married a normal woman (whose father was albino), what percent of the children would be expected to be albino?
10. In chickens, yellow legs (Y) are dominant over white legs (y). A yellow legged rooster was crossed with a white legged hen. Both kinds of offspring were produced. What are the genotypes of the parents and the offspring?
11. A yellow legged rooster was crossed with a white legged hen. All fifteen of the offspring were yellow legged. What is the genotype of the rooster?
12. In a cross between two white mice, in several litters, 12 out of 50 offspring were black.
 - a. What color is dominant?
 - b. What are the genotypes of the parents?
 - c. What are the genotypes of the black offspring?
13. What would be the genotypes of both parents in problem #12 if all fifty offspring were white?
14. If one fruit fly is heterozygous (red) and the other is homozygous recessive (white), what percent of the offspring would be expected to have white eyes?