Incomplete and Codominance Worksheet

Name:
Period:
Date:

(Non-mendelian monohybrid crosses)

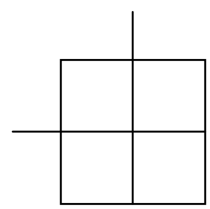
Answer the following questions. Provide a punnett square to support your answers where indicated. Express probabilities as percentages. For instance, a probability of one chance in ten would be 10%.

1. Explain the difference between incomplete dominance and codominance:

2. In some chickens, the gene for feather color is controlled by codiminance. The allele for black is B and the allele for white is W. The heterozygous phenotype is known as erminette.
   a. What is the genotype for black chickens? ____
   b. What is the genotype for white chickens? ____
   c. What is the genotype for erminette chickens? ____

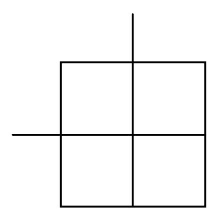
3. If two erminette chickens were crossed, what is the probability that:
   a. They would have a black chick? ____%
   b. They would have a white chick? ____%

Parents: ____ X ____



4. A black chicken and a white chicken are crossed. What is the probability that they will have erminette chicks? ____%

Parents: ____ X ____



5. In snapdragons, flower color is controlled by incomplete dominance. The two alleles are red (R) and white (W). The heterozygous genotype is expressed as pink.
   a. What is the phenotype of a plant with the genotype RR? ____________
   b. What is the phenotype of a plant with the genotype WW? ____________
   c. What is the phenotype of a plant with the genotype RW? ____________

6. A pink-flowered plant is crossed with a white-flowered plant. What is the probability of producing a pink-flowered plant? ____%

Parents: ____ X ____

7. What cross will produce the most pink-flowered plants? Show a punnett square to support your answer.

Parents: ____ X ____

8. Another type of non-mendelian trait: Multiple alleles. Human hair color is controlled by one gene with four alleles (with some incomplete dominance):

H^{Br} = brown H^{Bd} = blonde h^{R} = red h^{bk} = black

The possible genotypes and phenotypes:

$H^{Bd}H^{Bd}$ or $H^{Bd}h^{bk}$ = blonde $H^{Bd}H^{Br}$ = mousy brown

$H^{Bd}h^{R}$ = strawberry blonde $H^{Br}H^{Br}$ or $H^{Br}h^{bk}$ = brown

$H^{Br}h^{R}$ = auburn $h^{R}h^{R}$ or $h^{R}h^{bk}$ = red $h^{bk}h^{bk}$ = black

What do you think your parent's phenotypes and genotypes for hair color are?

What are <u>your</u> phenotype and genotype for hair color?

If someone with auburn hair has children with someone with red hair (but whose mother had black hair), what are the genotype and phenotype probabilities for their children?