Name _____ Date _____ Period _____

Complex Inheritance - Incomplete Dominance and Codominance

1. Many genetic traits have a stronger dominant allele and a weaker recessive allele. This is known as complete dominance. What is a trait, however, is NOT completely dominant and/or recessive.
   Summarize the difference between incomplete dominance and codominance.
   Incomplete dominance –
   Codominance -·

2. In some chickens, the heterozygous genotype leads to a phenotype known as **erminette**, feathers which are speckled with both black AND white. The allele for Black is B and the allele for white is W.
   a. This is an example of which inheritance pattern (*incomplete dominance or codominance*)?

   b. For each *phenotype* below, identify the *genotype*.

   Black Chickens _____ **White Chickens** _____ **Erminette Chickens** _____

3. A black chicken is crossed with a white chicken.
   a. Give the expected **probabilities** for each genotype and phenotype.

   b. Give the expected **ratios** for the genotypes and phenotypes.

4. Two erminette chickens are crossed.
   a. Give the expected **probabilities** for each genotype and phenotype.

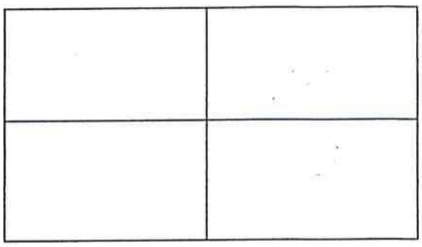
   b. Give the expected **ratios** for the genotypes and phenotypes.

5. In snapdragons, flower color is controlled by ***incomplete dominance***. The allele for red is R and the allele for white is W.

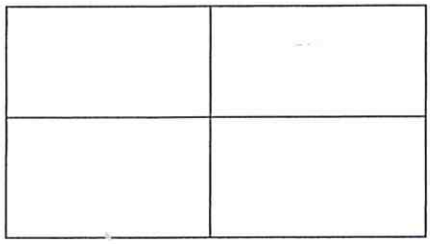
   a. Knowing this trait is incompletely dominant, what would be the **phenotype** for the heterozygous condition (RW)? _____

   b. For each *phenotype* below, identify the *genotype*.
   Red Genotype: _____ **White Genotype:** _____

6. A pink flowered snapdragon is crossed with a white flowered snapdragon.
   a. Give the expected **probabilities** for each genotype and phenotype.



   b. Give the expected **ratios** for the genotypes and phenotypes.



7. Edward is extremely romantic and wants to give Bella an entire bouquet of pink snapdragons, her favorite flower. Unfortunately, Edward only has red snapdragons in his greenhouse. In order to produce *the most number of pink snapdragons*, what color flower should Edward cross with his red snapdragons? Show the punnett square to defend your answer.

   a. This cross should produce _____% ***pink*** snapdragons.

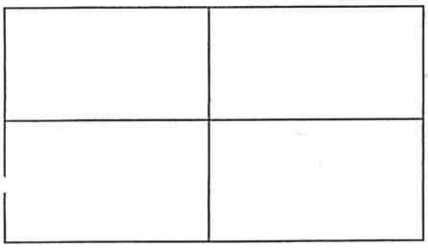
8. What would be Edward's **second choice** in order to produce pink snapdragons. Show the punnett square to defend your answer.

Explain

   a. This cross should produce ____50____% ***pink*** snapdragons.

	R	R
R	RR	RR
W	RW	RW

9. Hair color in certain breeds of horses can be Brown (B), White (W) or Palomino (*a <u>tan</u> color resulting from the heterozygous genotype BW*). Show the cross between a brown horse and a palomino horse.



   a. This is an example of which ***inheritance pattern***?

   b. Give the expected genotype & phenotype **probabilities**.

   c. Give the expected genotype and phenotype **ratios**.

10. Can palominos be considered a **purebred** line of horses? *Explain your answer.*

11. Palomino horses are worth a great deal of money. Which color horses would you breed if you wanted to produce *the most number of palominos in the shortest amount of time*? Show the punnett square to defend your answer.