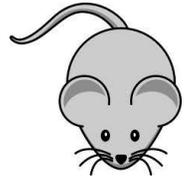


## Incomplete Dominance and Co-Dominance Practice Problems



### Incomplete Dominance

1. Coat color in mice is incompletely dominant. Yellow and white-colored mice are homozygous, while cream-colored mice are heterozygous. If two cream-colored mice mate, what phenotypic ratio can we expect of their offspring? Show the Punnett Square.
2. In radishes, red and white are pure-breeding colors, while hybrids are purple. If a red radish is crossed with a white radish, what will be the phenotype of the F<sub>2</sub> generation (assuming the F<sub>1</sub> generation self-pollinates)? Show the Punnett Square.
3. 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? \_\_\_\_\_
4. A pink-flowered plant is crossed with a white-flowered plant. Show the Punnett Square. What is the probability of producing a pink-flowered plant? \_\_\_\_%
5. What cross will produce the most pink-flowered plants? Show a punnett square to support your answer.
6. In Andalusian fowls, black individuals (B) and white individuals (W) are homozygous. A homozygous black bird is crossed with a homozygous white bird. The offspring are all bluish-gray. Show the cross as well as the genotypes and phenotypes of the parents and offspring.
7. What are the genotypic and phenotypic ratios if a black individual is crossed with a bluish-gray individual? Show the Punnett Square.
8. If two bluish-gray individuals were crossed, what would be the ratios for both phenotype and genotype of the offspring? Show the Punnett Square.

### Co-dominance

Human blood types are determined by genes that follow the CODOMINANCE pattern of inheritance. There are two dominant alleles (A and B) and one recessive allele (O).

9. Write the genotype for each person based on the description:
  - a. Homozygous for the "B" allele \_\_\_\_\_
  - b. Heterozygous for the "A" allele \_\_\_\_\_
  - c. Type O \_\_\_\_\_
  - d. Type "A" and had a type "O" parent \_\_\_\_\_
  - e. Type "AB" \_\_\_\_\_
10. Pretend that Brad Pitt is homozygous for the type B allele, and Angelina Jolie is type "O." What are all the possible blood types of their baby?
11. Draw a Punnett square showing all the possible blood types for the offspring produced by a type "O" mother and an a Type "AB" father

12. Two parents think their baby was switched at the hospital. Its 1968, so DNA fingerprinting technology does not exist yet. The mother has blood type "O," the father has blood type "AB," and the baby has blood type "B."
- Mother's genotype: \_\_\_\_\_
  - Father's genotype: \_\_\_\_\_
  - Baby's genotype: \_\_\_\_\_ or \_\_\_\_\_
  - Punnett square showing all possible genotypes for children produced by this couple
  - Was the baby switched?

13. Based on the information in this table, which men **could not** be the father of the baby? Justify your answer with a Punnett square.

Name	Blood Type
Mother	Type A
Baby	Type B
Sammy the player	Type O
George the sleeze	Type AB
The waiter	Type A
The cable guy	Type B

14. In some chickens, the gene for feather color is controlled by codominance. The allele for black is B and the allele for white is W. The heterozygous phenotype is known as erminette (black and white spotted).
- What is the genotype for black chickens? \_\_\_\_\_
  - What is the genotype for white chickens? \_\_\_\_\_
  - What is the genotype for erminette chickens? \_\_\_\_\_
15. Two erminette chickens were crossed. Show the Punnett square.
- What's the probability they would have a black chick? \_\_\_\_\_%
  - What's the probability they would have a white chick? \_\_\_\_\_%
16. A black chicken and a white chicken are crossed. Show the Punnett Square. What is the probability that they will have erminette chicks? \_\_\_\_\_%
17. In shorthorn cattle, when a red bull (RR) is crossed with a white cow (WW), all the offspring are roan—a spotted, red and white or milky red color. What offspring are expected from mating a roan bull and a roan cow? Show the Punnett Square.
18. What phenotypes would you expect from a cross between a red bull and a white cow? Show the Punnett Square.
19. If a roan bull were crossed with a red cow, what would be the possible phenotypes of their offspring? Show the Punnett Square.