**Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period: \_\_\_\_ Date: \_\_\_\_\_\_\_\_\_**

**Patterns of Inheritance Problems: Monohybrid Crosses**

***DOMINANCE / recessiveness***

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1. In humans widow’s peak (W) is dominant over straight hairline (w). A heterozygous man for this trait marries a woman who is also heterozygous.
   1. What is the genotype for the man? \_\_\_\_\_\_
   2. What is the genotype for woman? \_\_\_\_\_\_
   3. What will be the genotype and phenotype of the  
         
      first generation?

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1. Cystic fibrosis is a recessive (f) genetic disorder. Ron is homozygous dominant and Nancy is a carrier of cystic fibrosis?
   1. What is the genotype for Ron? \_\_\_\_\_\_
   2. What is the genotype for Nancy? \_\_\_\_\_\_
   3. Use a Punnett square to predict the probability   
        
      that one of their children will have cystic fibrosis.
2. Hornless (H) in cattle is dominant over horned (h). A homozygous hornless bull is mated with a heterozygous cow.

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* 1. What is the genotype of the bull? \_\_\_\_\_\_
  2. What is the genotype of the cow? \_\_\_\_\_\_
  3. What will be the genotype and phenotype of the  
       
     first generation?

1. ***CHALLENGE*** : In humans, acondroplasia “dwarfism” (D) is dominant over normal (d). A homozygous dominant (DD) person dies before the age of one. A heterozygous (Dd) person is dwarfed. A homozygous recessive individual is normal. A heterozygous dwarf man marries a dwarf heterozygous woman. What is the probability of having a normal child? What is the probability of having a child that is a dwarf? What is the probability of having a child that dies at one from this disorder?

***INCOMPLETE DOMINANCE***

1. In snapdragons, a gene that affects flower color has two alleles: red (R) and white (W). In heterozygous individuals, the phenotype is pink.

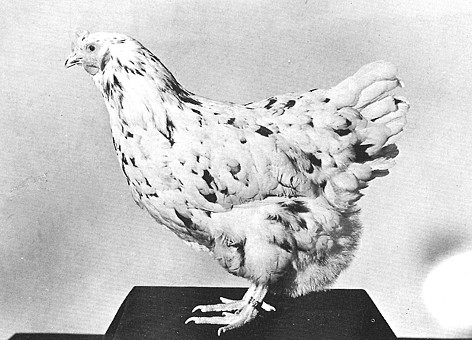
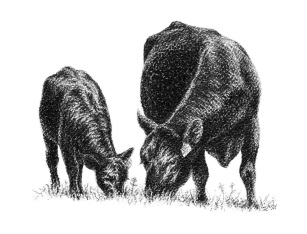
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* 1. What is the genotype of a pink flower? \_\_\_\_\_\_
  2. Show a cross between two pink snapdragons and give the expected genotype and phenotype.



1. ***CHALLENGE*** In Andalusian fowls, black individuals (B) and white individuals (b) are homozygous. Heterozygous individuals are bluish-gray. What results if a black individual is crossed with a bluish-gray individual? Show the cross as well as the genotypes and phenotypes of the parents and offspring.

***CODOMINANCE***

1. 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.
   1. What is the genotype for black chickens? \_\_\_\_
   2. What is the genotype for white chickens? \_\_\_\_
   3. What is the genotype for erminette chickens? \_\_\_\_
   4. If two erminette chickens were crossed, what is the probability that:
      1. They would have a black chick? \_\_\_\_%
      2. They would have a white chick? \_\_\_\_%
      3. They would have an erminette chick? \_\_\_\_%
2. ***CHALLENGE*** In shorthorn cattle, coat color may be red, white, or roan. In roan cattle, their coats are a mixture of red and white hairs, although the animals appear a light rust color from a distance. Show a cross between a roan bull and a red cowe and give the expected genotype and phenotype.