

# Monohybrid Crosses

## COMPLETE DOMINANCE

1. For each genotype, indicate whether it is heterozygous (HE) or homozygous (HO):

AA\_\_\_\_, Aa\_\_\_\_, aa\_\_\_\_, Kk\_\_\_\_, CC\_\_\_\_, DD\_\_\_\_, ee\_\_\_\_, Bb\_\_\_\_, Vv\_\_\_\_.

2. For each of the genotypes below, determine the phenotype.

*Purple flowers are dominant to white flowers.*

PP \_\_\_\_\_

Pp \_\_\_\_\_

pp \_\_\_\_\_

*Brown eyes are dominant to blue eyes.*

BB \_\_\_\_\_

Bb \_\_\_\_\_

bb \_\_\_\_\_

*Round seeds are dominant to wrinkled.*

RR \_\_\_\_\_

Rr \_\_\_\_\_

rr \_\_\_\_\_

*Bobtails are recessive (long tails dominant).*

TT \_\_\_\_\_

Tt \_\_\_\_\_

tt \_\_\_\_\_

3. For each phenotype, list the genotypes. (Remember to use the letter of the dominant trait)

*Straight hair is dominant to curly.*

\_\_\_\_\_ straight

\_\_\_\_\_ straight

\_\_\_\_\_ curly

*Pointed heads are dominant to round heads.*

\_\_\_\_\_ pointed

\_\_\_\_\_ pointed

\_\_\_\_\_ round

4. Set up the square for each of the crosses listed below. The trait being studied is round seeds (**R**) and wrinkled seeds (**r**).

a) **Rr x rr**


Genotypes %

Phenotypes %

b) Rr x Rr


Genotypes %

Phenotypes %

c) RR x Rr


Genotypes %

Phenotypes %

**More Complete Dominance Practice-** show all work and remember to include keys!

5. A homozygous dominant tall plant is crossed with a short plant. What percentage of the offspring will be tall?
  
  
  
  
  
  
  
  
  
  
6. In guinea pigs, the allele for short hair is dominant. Show the cross for two heterozygous guinea pigs. What percentage of offspring will have short hair?

7. In pea plants, purple flowers are dominant to white flowers. If two white flowered plants cross, what percentage of their offspring will be white flowered?
8. A **testcross** is used to determine if the organism showing a dominant trait is homozygous or heterozygous. For example, if two purple heterozygous flowers crossed and produced a purple offspring, a test cross would determine whether the purple offspring was also heterozygous or whether it was homozygous dominant.

What test cross results would you expect if the purple offspring was heterozygous? What results would you expect if the purple offspring was homozygous dominant? Show your work! (**Remember that in a testcross, the individual of the unsure genotype is crossed with the recessive individual.**)

## **INCOMPLETE DOMINANCE**

### **ANDULASIAN CHICKENS**

Inheritance of feather color in Andulasian chickens follows the pattern of incomplete dominance. Black Andalusian chickens have BB genes, white Andalusian chickens have WW genes and blue Andalusian chickens have BW genes for feather color.

1. Determine the possible genotypes and phenotypes of offspring of one black and one white Andalusian chicken.

2. Determine the possible genotypes and phenotypes of offspring of two blue Andalusian chickens.
3. Determine the possible genotypes and phenotypes of offspring of one blue and one white Andalusian chicken.

#### **FOUR O'CLOCK COLOR**

Petal color of four o'clock flowers is inherited by incomplete dominance. Plants with RR genes have red flowers. Plants with WW genes have white flowers. Plants with RW genes have pink flowers.

4. Sarah planted four o'clock in her garden. All the seeds came from one set of parent plants. When the flowers bloomed, Sarah saw that all her flowers were pink. What were the genes of the parent plants? Show your reasoning.
5. Matthew also planted four o'clock. All of his seeds came from one set of parents. When his plants bloomed, 50% were white and 50% were pink. What were the genes of the parent plants? Show your reasoning.

