

# Dihybrid Crosses

Dihybrid cross: \_\_\_\_\_

- Example Problem: Pea plant cross: PpYy x PpYy

How many possible allele combinations can each parent produce? \_\_\_\_\_

What are they? \_\_\_\_\_


Genotype ratio: \_\_\_\_\_

Phenotype Ratio: \_\_\_\_\_

Mendel's Laws:

Conditions where the laws apply: 1. \_\_\_\_\_

2. \_\_\_\_\_

Law of Segregation: \_\_\_\_\_

Law of Independent Assortment: \_\_\_\_\_

Try the lemming example problem:

## Dihybrid Crosses: Practice Problems

1. In rabbits, white fur color (W) is dominant to black, and long ears (L) are dominant to short. Draw a Punnett square that represents the cross between two rabbits heterozygous for both traits. What are the phenotype and genotype ratios?

2. In humans, polydactylism (having an extra finger on each hand) is dominant to the typical 5-finger arrangement. Tongue rolling is dominant to not being able to roll one's tongue. A man who is homozygous for 5-fingers and who cannot roll their tongue has children with a woman who is heterozygous for polydactylism and tongue rolling. Draw a Punnett square that represents the cross. What is the probability the couple will produce a polydactyl baby who cannot roll their tongue?

3. A species of bird is threatened with extinction because its habitat is being destroyed by deforestation. As a research ecologist, you have been chosen to ensure the genetic diversity of the species. In this species of bird, feathers may be white, black, or white with black spots. In the same species, beaks may be long, medium or short. A black bird with a medium beak pairs with a spotted bird with a long beak. Draw a Punnett square that represents the cross. Make a list of all of the phenotype combinations this pair could possibly produce.