

Punnett Squares Practice Packet



Most genetic traits have a stronger, dominant allele and a weaker, recessive allele. In an individual with a heterozygous genotype, the dominant allele shows up in the offspring and the recessive allele gets covered up and doesn't show; we call this **complete dominance**.

However, some alleles don't completely dominate others. In fact, some heterozygous genotypes allow both alleles to blend. This is called **incomplete dominance**.

Other heterozygous genotypes allow both alleles to be expressed at the same time like spots or stripes. This is called **codominance**.

Examples of each are listed below.

1. **Complete dominance**

RR = Red
Rr = Red
rr = White

2. **Incomplete dominance**

RR = Red RR = Red
Rr = Pink or RW = Pink
rr = White WW = White

3. **Codominance**

RR = Red RR = Red
Rr = Red and White or RW = Red and White
rr = White WW = White

Incomplete dominance practice problem

Snapdragons are incompletely dominant for color; they have phenotypes red, pink, or white. The red flowers are homozygous dominant, the white flowers are homozygous recessive, and the pink flowers are heterozygous. Give the genotypes for each of the phenotypes, using the letters "R" and "W" for alleles:

a. Red snapdragon
genotype: _____

b. Pink snapdragon
genotype: _____

c. White snapdragon
genotype: _____

Show genetic crosses between the following snapdragon parents, using the Punnett squares provided, and record the genotypic % and phenotypic %s below:

a. pink x pink

Genotypic
%: _____
Phenotypic
%: _____

b. red x white

Genotypic
%: _____
Phenotypic
%: _____

c. pink x white

Genotypic
%: _____
Phenotypic
%: _____

Co-dominance practice problem

In horses, some of the genes for hair color are co-dominant. In other words, both colors will show if the genotype is heterozygous. Genotypes are as follows: brown horses are BB, tan horses are TT and a BT genotype creates a brown and tan colored horse. Show the genetic crosses between the following horses and record the genotypic and phenotypic percentages:

a. brown x tan and brown

Genotypic
%: _____
Phenotypic
%: _____

b. brown x tan

Genotypic
%: _____
Phenotypic
%: _____

c. two brown and tan horses

Genotypic
%: _____
Phenotypic
%: _____

Can a cross between a tan horse and a brown horse ever have offspring that resemble the parents?