Using the Punnett Square
Dominant and Recessive

1. Define the following genetics vocabulary.

Trait passed down from parents = genetically determined

Phenotype
appearance of a trait

Genotype
two genes that determine the phenotype

Allele
different versions of a gene
B = brown hair
b = blond hair

Dominant

"strong" genes - always determine the phenotype

Recessive

"quiet" genes. need 2 together to determine the phenotype

bb = blond

Homozygous two of the same allele BB bb

Heterozygous

two different alleles Bb

2. Steps for doing a Punnett Square.
   a. Outside the Punnett Square **separate each parent's genotype** into the egg/sperm possibilities.
   b. Make the **four possible crosses** with these possible egg/sperm genes.
   c. Look at the four possible genotypes and determine what the possible **phenotypes** are.
   d. Write down the possible **phenotypes as percentages.**

Dad P

a.

	P	p
P		
p		

Mom

b.

	P	p
P	PP	Pp
p	Pp	pp

c. purple & white

d. purple 75%
white 25%

P = purple

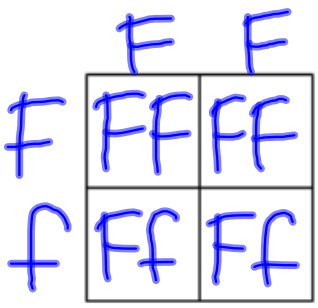
p = white

Pp x Pp

Sample problems:

Freckles - F=present, f=absent

Ff x Ff

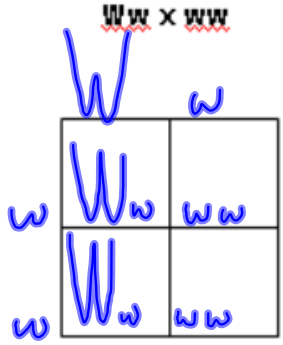


Phenotype results as percentages

Freckles - 100%

Widow's Peak - W=present, w=absent

Ww x ww

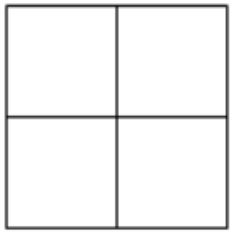


Phenotype results as percentages

50% widow's peak
50% absent

3. Make the following dominant/recessive crosses using a Punnett Square. (1 point each)
Make sure your capital and small letters are clearly different.
Next to each Punnett Square, write the **percentage probability** of the resulting possible **phenotypes.**

a. Mendel's pea plant flower color
P = purple, p = white **PP x Pp**



Phenotype results as percentages