

**Worksheet 2**

         Name

1. Suppose that flower color is determined by a single gene locus and that red flowers are dominant to white flowers. If a heterozygous dominant individual is crossed with a heterozygous dominant individual, what is the probability of obtaining a pure offspring?
  - a. 100%
  - b. 75%
  - c. 50%
  - d. 25%
  - e. 0%
  
2. Dog eye color is controlled by two separate genes with 2 alleles each. A dog's eye is red with large wings (RrWw) mate a white-eyed dog with small wings (rrww)
  - a. What are the genotypes of the 4 possible red-eyed pups that will be used to determine the fraction offspring from the cross?  
**RrWw, Rrww, RrWw, Rrww**
  - b. Does Mendel's law of independent assortment apply to the possible offspring? **Yes**  
 combinations: genotype 1 from parent having genotype RrWw and ww

	rW	Rw	rw	Rw
Rw	RrWw	Rrww	RrWw	Rrww
Rw	RrWw	Rrww	RrWw	Rrww
rw	RrWw	Rrww	RrWw	Rrww
rw	RrWw	Rrww	RrWw	Rrww

- a. What is the resulting genotype ratio? **phenotype ratio?**
    - i. **the ratio you indicate when you put all the same alleles, i.e. don't put say 4 1 1 1 they should be numbers after**
- 1:1:1:1**  
**50% red w/ large wings, 50% red w/ small wings**  
**50% white w/ large wings, 50% white w/ small wings**
3. Small eye is recessive controlled by a single gene locus with two alleles. (Homozygous recessive - the first two) mate a heterozygous dominant white - the first two) mate
    - a. What is the expected percentage ratio of the offspring?  
**50:50**
    - b. Describe the phenotypic ratio expected from this cross including the average colored offspring to the average colored percentage.

	H	h	h
H	HH	Hh	Hh
h	Hh	hh	hh