**Genetics Worksheet #5: Sex-Linked Inheritance**

1. In Drosophila, eye color is a sex-linked characteristic with the gene for red eyes (R) being dominant to white eyes (r).
   1. Give the genotypic and phenotypic ratio of a cross between a white eyed female and a red eyed male.
   2. Give the genotypic and phenotypic ratio of a cross between a carrier female and a white eyed male.
2. Color-blindness is a sex-linked characteristic in humans that is controlled by the recessive allele b.
   1. If color blind man marries a woman homozygous for normal vision, what are the chances that their children will be color blind?
   2. If a color blind man marries a carrier female, what percentage of their daughters would be color blind? What percentage of their sons would be color blind?
3. In cats, an X-linked gene controls fur color. The allele B for yellow fur is incompletely dominant over the allele b for black. Individuals with both alleles are tortoise shell.
   1. Why are most tortoise shell cats female?
   2. A yellow male cat is crossed with a tortoise shell female. If the female had a litter of 6 males, what color would they be?
   3. A yellow cat has a litter of 2 tortoise shell and one yellow, what is the probable sex of the yellow kitten?
   4. A tortoise shell female has a litter of 7 kittens:

2 yellow females 2 tortoise shell females

1 black male 2 yellow males

Assuming the litter had one father, what is his genotype and phenotype?

* 1. A black cat has a litter of 5 kittens, 3 black males and 2 tortoise shell females. What is the genotypes and phenotypes of the parents?
  2. How would you explain the presence of tortoise shell males in a litter?