Name: _____ Date: _____

Genetics Problem Set #1

The best way to gain an understanding of genetics is to work through genetics problems. The fundamental principles discussed in lecture will become clearer to you if you carefully work through the following problem set which illustrates the various patterns of inheritance treated in the genetics' chapter of your text book.

For each question, draw a Punnett-square and label both parental and filial genotypes.

1. In squash a gene for white color (W) is dominant over its allele for yellow color (w). Give the genotypic and phenotypic ratios for the results of each of following crosses:
WW x ww
Ww x ww

2. In human beings, brown eyes are usually dominant over blue eyes. Suppose a blue-eyed man marries a brown-eyed woman whose father was blue-eyed. What is the probability that the couple will have a child with blue eyes?

3. A brown mink crossed with a silverblue mink produced all brown offspring. When these F_1 mink were crossed among themselves they produced 47 brown animals and 15 silverblue animals (F_2 generation). Determine all the genotypes and phenotypes, and their relative ratios, in the F_1 and F_2 generations.

4. In fruit flies (*Drosophila melanogaster*), eye color is determined by a single gene. The red eye allele is dominant over the white eye allele. If you had a fruit fly with red eyes, what would you do to determine its genotype?