Some practice problems for population genetics:

1. In a Hardy-Weinberg population with two alleles, *A* and *a,* that are in equilibrium, the frequency of the allele *a* is 0.4. What is the percentage of the population that is homozygous for this allele?
2. A population survey shows that 160 out of 250 individuals express the recessive phenotype. What percentage of the population would you predict to be heterozygotes?
3. Consider a flower color gene represented by a dominant allele, R, and a recessive allele, *r*. A population survey finds 34 homozygous dominant, 17 homozygous recessive, and 46 heterozygous individuals. Calculate the allele frequencies of R and *r*.
4. In a herd of cattle, RR is red coat, Rr roan, and rr white, what is the genotypic frequency of Rr if the allelic frequency of R is .2?
5. The compound phenylthiocarbamide (PTC) tastes very bitter to most people. The inability to taste PTC occurs when individuals are homozygous for the recessive allele of a single gene. In one population that was studied, about 70% of the individuals can taste PTC while 30% cannot (are non-tasters). Estimate the frequencies of the Taster (T) and nontaster (t) alleles in this population as well as the frequencies of each of the three possible genotypes.
6. In a population of mice, there are 3 alleles of a gene. The allelic frequency of A is .6, B is .3, and C is .1. What is the genotypic frequency of AB?