1. A population of 100 butterflies in Hardy-Weinberg equilibrium was sampled for wing color. Blue wings are dominant; orange wings are recessive. 80 individual have blue wings. 20 individuals have orange wings.
   1. What is the value of p (the dominant allele)?
   2. What is the value of q (the recessive allele)?
   3. What is the genotype frequency of the p2 (homozygous dominant) individuals?
   4. What is the genotype frequency of the q2 individuals (homozygous recessive) individuals?
   5. What is the genotype frequency of the 2pq (heterozygous) individuals?
2. The recessive allele occurs at a frequency of 0.4 in a population of black rhinos in Hardy-Weinberg equilibrium.
   1. What is the frequency of homozygous dominant individuals?
   2. What is the frequency of homozygous recessive individuals?
   3. What is the frequency of heterozygous individuals?
3. You sample coat color a herd of horses and find that 49% are homozygous dominant, 42% are heterozygous, and 9% are homozygous recessive.
   1. What is the frequency of p and q?
4. In a population of beetles, wing color is a hereditary trait with blue wings dominant and green wings recessive. A sample is taken from a local population of beetles; 12 beetles have green wings and 88 beetles have blue wings.
   1. What is the frequency of q?
   2. What is the frequency of p?
   3. Of the blue winged beetles, how many are heterozygous?