

HARDY-WEINBERG PROBLEMS

1. The frequency of two alleles in a gene pool is 0.1 (**A**) and 0.9 (**a**). What is the percentage in the population of heterozygous individuals? Of homozygous recessives? Assume the population is in Hardy-Weinberg equilibrium.
2. Allele **B** for white wool, is dominant over allele **b**, for black wool. In a sample of 900 sheep, 891 are white and 9 are black. Estimate the allelic frequencies in this sample, assuming the population is in equilibrium.
3. In a population that is in Hardy-Weinberg equilibrium, the frequency of the recessive homozygous genotype of a certain trait is 0.09. What is the percentage of individuals homozygous for the dominant allele?
4. In a population that is in Hardy-Weinberg equilibrium, 36 percent of the individuals are recessive homozygotes for a certain trait. For the same trait, what is the percentage in this population of homozygous dominant individuals? Of heterozygous individuals?
5. Allele **T**, for the ability to taste a particular chemical, is dominant over allele **t**, for the inability to taste it. At Cornell University, out of 400 surveyed students, 64 were found to be non tasters. What is the percentage of heterozygous students? Assume the population is in equilibrium.
6. In humans, Rh-positive individuals have Rh antigen on their red blood cells, while Rh-negative individuals do not. Assume that the Rh-positive phenotype is produced by a dominant allele **Rh** , and the Rh-negative phenotype is produced by its recessive allele **rh** . In a population that is in Hardy-Weinberg equilibrium, if 84 percent of the individuals are Rh-positive, what are the frequencies of the **Rh** allele and the **rh** allele at this locus?
7. In corn, yellow kernel color is governed by a dominant allele; white, by its recessive allele. A random sample of 1,000 kernels from a population that is in equilibrium reveals that 910 are yellow and 90 are white. What are the frequencies of the yellow and white alleles in this population? What is the percentage of heterozygous in this population?
8. A rare disease due to a recessive allele which is lethal when homozygous occurs with a frequency of one in a million. How many individuals in a town of 14,000 can be expected to carry this allele?

(Taken from University of Western Ontario website)