1. Which of the following populations are in Hardy-Weinberg equilibrium? (To answer the question, carry out a statistical test of this hypothesis).

	Genotype		
Pop'n	*AA*	*Aa*	*aa*
1	25	50	25
2	10	80	10
3	40	20	40

2. For problem 1, for those populations which deviate significantly from H-W expectation, suggest an explanation consistent with the observed deviations.

3. For genotypes with the following fitnesses and frequencies at birth

Genotype	*AA*	*Aa*	*aa*
Birth Freq'cy	p^2	$2pq$	q^2
Fitness	1	1	1-*s*

a. What is the frequency of *AA* individuals in the adult population?
b. What is the frequency of the *A* allele in the adult population?
c. What is the mean fitness of the population?

4. Consider a locus with 2 alleles, *A* and *a*. *A* is dominant, and selection is working against the recessive homozygote. The frequency of *A* in two successive generations is 0.4875 and 0.5. What is the value of *s*, the selection coefficient against the *aa* genotype?

5. Listed below are adult genotype frequencies for a locus with two alleles. The polymorphism is maintained by heterozygote advantage, due to differences in survival (not reproduction). What are the fitnesses (and selection coefficients) of the two homozygotes, relative to a fitness of 1 for the heterozygote?

Genotype	$A_1 A_1$	A_1A_2	$A_2 A_2$
Adult Freq'cy	1/6	2/3	1/6