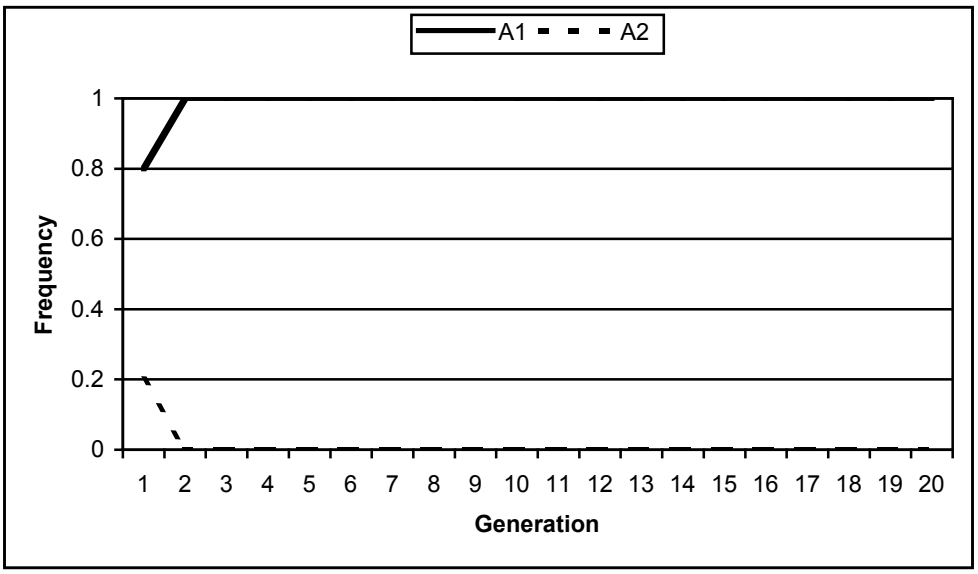
Answers to Exercise 42

Genetic Drift

1. Once an allele has a frequency of either 1 or 0, the frequencies can no longer change in the population. This is because all individuals have the identical genetic make-up, and hence offspring will be identical as well. The population, once fixed, will not evolve (with respect to the *A* gene) unless a mutation occurs to introduce another allele into the population, or unless new immigrants with different alleles enter the population.

2. You should see that the probability of fixation increases, and that the alleles tend to be fixed in early generations rather than later. One of our trials had the following (typical) result.



3. Changes in allele frequencies due to drift are less severe in large populations than small ones. Thus, the fixation rate should be lower for the larger population.