

CHAPTER 19	Investigation 19.B: Testing the Hardy-Weinberg Principle Answer Key	BLM 19.1.8A
ANSWER KEY		

Answers to Analysis Questions

- The graph should have time interval (generations) on the x axis and genotype frequencies in decimals on the y axis (no units for the y axis). The graph should take up at least $3/4$ of the graph paper. There should be a figure number and a caption or title on the graph. Points should be plotted with point protectors, and best fit lines drawn. Different shaped point protectors should distinguish the four different lines, and a key to the shapes should be provided. There should be a statement or two comparing the results as shown by the graph with the predicted results.
 - The calculation of allele frequencies should be correct for the data obtained by the class. A statement or two making a comparison between your prediction and the pooled class allele frequencies should be provided. Ideally, the results should be fairly similar to the predicted outcome.
- This graph should show a decrease in frequency of the recessive allele and an increase in the frequency of the dominant allele. There should be a statement or two comparing the results as shown by the graph with the predicted results.
 - The calculation of allele frequencies should be correct for the data obtained by the class. There should be a statement or two making a comparison between your prediction and the pooled class allele frequencies. Ideally, the results should be fairly similar to the predicted outcome.
 - The number of alleles will drop as the LL genotypes are removed. There will be an increasing effect as the number of alleles in the population continues to drop. This effect results in each individual allele contributing more to each generation than at the start of the experiment.
- Pooling data from the class increases the size of the data set, and reduces the effects of chance occurrences. Pooling data also reduces the impact of sources of error (variation) on the outcome.
- Assumptions include: no mortality for dominant phenotypes, no migration, no mutation, all gametes are used to make the next generation, each adult produces only two gametes. Of these, lack of mortality for dominant phenotypes, all gametes being used to make the next generation, and only two gametes formed by each parent are almost certainly false.

Answers to Conclusions Questions

- Answers will depend on the allele frequencies observed. Changes should be minimal with allele frequencies varying around a constant value for each allele. Conditions of the Hardy-Weinberg principle are met with the exception of the size of the population. Even 80 alleles is a small population in genetics terms.
- In Part 2, the frequency of the dominant allele should increase, and the frequency of the recessive allele should decrease. This is due to selection (not natural) against the recessive allele. The conditions required for the Hardy-Weinberg principle are not met here; selection is occurring, and the population gets smaller as the activity continues, which increases the effect of chance events and genetic drift.