

Hardy-Weinberg Equilibrium Worksheet 1

Read the following passages carefully to correctly answer the questions. **You must show all work.**
Remember...

$$p + q = 1$$

p = frequency of the dominant allele

q = frequency of the recessive allele

$$p^2 + 2pq + q^2 = 1$$

p^2 = frequency of AA (homozygous dominant)

$2pq$ = frequency of Aa (heterozygous)

q^2 = frequency of aa (homozygous recessive)

1. If you observe a population and find that 9% show the recessive trait, you know the frequency of the aa genotype. This means you know q^2 . What is the q for this population?

What is the p for this population?

2. In a certain population of 1000 fruit flies, 640 have red eyes while the remainder have sepia eyes. The sepia eye trait (r) is recessive to red eyes (R). Calculate the following:
 - a. The frequency of sepia eyes.
 - b. The frequency of the sepia eye recessive allele (r).
 - c. The frequency of the red eye dominant allele (R).
 - d. What percent of the population would you expect to be homozygous for red eye color? How many individuals would you expect this to be?
 - e. What percent of the population would you expect to be heterozygous for red eye color? How many individuals would you expect this to be?

