Name: **Date:**

AP Biology Prelab for Lab 8: Population Genetics

1. List the five conditions necessary for a population to be in Hardy-Weinberg equilibrium.

2. Since no population on earth is actually in HW equilibrium, why is the concept useful for evolutionary biologists?

3. Briefly explain the procedure for each of the cases in the lab. For cases 2-4, please explain how they are different from case 1 and why they are different (in other words, what is the point to changing the scenario in each case?)
    a. Case 1

    b. Case 2

    c. Case 3

    d. Case 4

4. With the data below, use the Hardy-Weinberg equation to determine the gene frequency (p and q) of each population.
    a. 49% of the people in a population cannot roll their tongue (the recessive condition).

    b. 25% of the people in a population do not have a widow's peak (the recessive condition).

    c. 1 out of 10 people have the autosomal recessive illness cystic fibrosis.

    d. 4 out of 100 people have the autosomal recessive illness Thalessemia.

    e. 2 out of 1000 people have the recessive illness phenylketonuria (PKU).