Hardy-Weinberg Equilibrium Review

For full credit, please show all of your work and circle your final answer.

1. If q=0.28, then what is the frequency of p?

2. If p2=0.49, then what is the frequency of q?

3. If in a population of ruddy ducks, 3 out of every 10 birds display the recessive phenotype for floppy tail, then the values for the following are:

p=

p^2=

q=

q^2=

4. If there are 338 butterflies in a population of 431 that express the dominant phenotype for black wing color, then what are the values for:

p=

p^2=

q=

q^2=

5. List the 5 assumptions for a population to be in Hardy-Weinberg equilibrium.

1.

2.

3.

4.

5.

6. What happens when one or more of the assumptions for Hardy-Weinberg equilibrium are violated?

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7. In a well-studied population of 3721 Arctic lemmings, the allele for white fur is dominant to the allele for brown fur. During a National Geographic special on lemming behavior, you notice four brown lemmings. Assuming that you saw all of the brown lemmings in the study population, and that this population is in Hardy-Weinberg equilibrium, how many lemmings are homozygous for white fur?

8. In East Lansing, 96.3% of the big brown bats express the dominant dark brown skin color on their patagium (their wing skin). If there are 8173 big brown bats in East Lansing, how many would we expect to be heterozygous for the trait of patagium color if this population is in Hardy-Weinberg equilibrium?