

SECTION  
**11.4**

HARDY-WEINBERG EQUILIBRIUM  
**Study Guide**

**KEY CONCEPT**

**Hardy-Weinberg equilibrium provides a framework for understanding how populations evolve.**

**VOCABULARY**

Hardy-Weinberg equilibrium

**MAIN IDEA:** Hardy-Weinberg equilibrium describes populations that are not evolving.

1. What variable remains constant, or in equilibrium, in the Hardy-Weinberg model?

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2. Name the five conditions required for a population to be in Hardy-Weinberg equilibrium.

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3. Name two ways that population biologists can use Hardy-Weinberg equilibrium.

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**MAIN IDEA:** The Hardy-Weinberg equation is used to predict genotype frequencies for a population.

4. Write the Hardy-Weinberg equation:
5. Fill in the missing information about the variables involved in the Hardy-Weinberg equation.

Variable	What It Represents
	frequency of dominant homozygous genotype
$2pq$	
	frequency of recessive homozygous genotype
$p$	
	frequency of recessive allele

## Section 11.4 STUDY GUIDE CONTINUED

6. In what types of systems can the Hardy-Weinberg equation be used?

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7. What variables must be known in order to use the Hardy-Weinberg equation?

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8. What can be concluded if real genetic data do not match the frequencies predicted by the equation?

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**MAIN IDEA:** There are five factors that can lead to evolution.

9. Take notes about these five factors in the table below.

Factor	How It Can Lead To Evolution
genetic drift	
gene flow	
mutation	
sexual selection	
natural selection	

### Vocabulary Check

10. A population is said to be in Hardy-Weinberg equilibrium for a trait if

\_\_\_\_\_ stay the same from generation to generation.