*Use the information in Chapter 23.3 and 23.4 (p.476-485) to complete the following questions/table.*

1. Discuss what is meant by *microevolution*.

**Concept 23.1: Genetic variation makes evolution possible**

1. Explain why genetic variation is important for a population to occur.
2. Explain how each of the following contribute to sources of genetic variation:
   * Formation of new alleles
   * Altering gene number or position
   * Rapid reproduction
   * Sexual reproduction

**Concept 23.2: The Hardy-Weinberg equation can be used to test whether a population is evolving**

*Watch Bozeman’s podcast* [*Hardy-Weinberg Punnett Square*](http://www.bozemanscience.com/hardy-weinberg-punnett-square) *before reading this next section!*

1. Explain what is meant by a population’s *gene pool*?
2. What does the Hardy-Weinberg principal state?
3. Write the Hardy-Weinberg equation and define all of the major variables

1. What five conditions must be met for a population to be in Hardy-Weinberg equilibrium?

**Concept 23.3: Natural selection, genetic drift, and gene flow can alter allele frequencies in a population**

*Complete the table below to organize information about the factors that alter gene frequencies.*

|  |  |  |
| --- | --- | --- |
| **Disruption of Gene Frequency** | **Explanation** | **Example** |
| Natural Selection |  |  |
| Genetic Drift |  |  |
| Founder Effect |  |  |
| Bottleneck effect |  |  |
| Gene Flow |  |  |

1. Explain what is meant by *relative fitness*.
2. Draw a diagram for, summarize, and cite an example for each of the following types of selection:
   * Directional
   * Disruptive
   * Stabilizing
3. Explain how sexual selection may result in sexual dimorphism.
4. Describe an example of intrasexual selection and intersexual selection.
5. Explain the meaning of *heterozygote advantage* and describe an example in humans.
6. How is genetic variation preserved in a population?
7. Explain why natural selection does not produce “perfect” organisms.