

## Patterns Of Natural Selection Worksheet

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### Part 1: Building a Foundation

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**What is the primary mechanism by which traits that enhance survival become more common in a population?**

*Hint: Think about the process that favors certain traits over others.*

- A) Genetic Drift
- B) Natural Selection
- C) Mutation
- D) Gene Flow

**Which of the following are necessary conditions for natural selection to occur? (Select all that apply)**

*Hint: Consider the factors that must be present for natural selection to take place.*

- A) Variation in traits
- B) Random mating
- C) Differential survival and reproduction
- D) Inheritance of traits

**Explain the concept of stabilizing selection and provide an example of how it might occur in a natural population.**

*Hint: Think about how certain traits are favored in a population.*

**List the three main types of natural selection and provide a brief description of each.**

*Hint: Consider the different ways natural selection can operate.*

1. Stabilizing Selection

2. Directional Selection

3. Disruptional Selection

**Which type of natural selection is most likely to lead to speciation?**

*Hint: Think about which selection type promotes divergence in populations.*

- A) Stabilizing Selection
- B) Directional Selection
- C) Disruptional Selection
- D) Artificial Selection

## Part 2: Comprehension and Application

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**How does directional selection affect the average phenotype of a population?**

*Hint: Consider how traits shift in response to selection pressures.*

- A) It increases variation around the average.
- B) It shifts the average phenotype in one direction.
- C) It maintains the average phenotype.
- D) It decreases variation by favoring extremes.

**Which of the following scenarios illustrate the concept of directional selection? (Select all that apply)**

*Hint: Think about examples where one trait is favored over others.*

- A) A population of rabbits where only the fastest survive predators.
- B) A population of birds where medium-sized beaks are favored.

- C) A population of moths that become darker due to industrial pollution.
- D) A population of fish where both small and large sizes are favored over medium sizes.

**Imagine a scenario where a population of fish is introduced to a new environment with different food sources. How might natural selection act on this population over time?**

*Hint: Consider how changes in food availability could affect fish traits.*

**If a new predator is introduced to an environment, which type of natural selection is most likely to occur in the prey population?**

*Hint: Think about how the introduction of a predator affects prey traits.*

- A) Stabilizing Selection
- B) Directional Selection
- C) Disruptional Selection
- D) Balancing Selection

### Part 3: Analysis, Evaluation, and Creation

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**Which type of natural selection is illustrated by a population of birds where only the largest and smallest beaks are favored, but not the medium-sized ones?**

*Hint: Consider how certain traits are selected against.*

- A) Stabilizing Selection
- B) Directional Selection
- C) Disruptional Selection
- D) Balancing Selection

**Consider a population of plants where some individuals have developed a resistance to drought. Which factors could influence whether this trait becomes more common in the population? (Select all that apply)**

*Hint: Think about environmental and genetic factors that affect trait prevalence.*

- A) The frequency of droughts in the environment.
- B) The genetic variation within the population.
- C) The presence of other plant species.
- D) The rate of reproduction in resistant plants.

**Analyze how gene flow between two populations can affect the process of natural selection in each population.**

*Hint: Consider how the mixing of genes influences adaptation.*

**Which of the following statements best evaluates the role of natural selection in the evolution of antibiotic resistance in bacteria?**

*Hint: Think about how natural selection impacts bacterial survival.*

- A) Natural selection has no impact on antibiotic resistance.
- B) Natural selection favors bacteria that are susceptible to antibiotics.
- C) Natural selection leads to the survival of bacteria with resistance traits.
- D) Natural selection eliminates all bacteria, resistant or not.

**Propose a hypothetical scenario where a new environmental pressure leads to the development of a new trait in a population. Describe the steps of natural selection that would lead to this outcome.**

*Hint: Consider how environmental changes can drive evolution.*