

# Active Reading

## Section: Origins of Hereditary Science

Read the passage below. Then answer the questions that follow.

Mendel's initial experiments were monohybrid crosses. A monohybrid cross is a cross that involves one pair of contrasting **traits**. For example, crossing a plant with purple flowers and a plant with white flowers is a monohybrid cross. Mendel carried out his experiments in three steps.

**Step 1:** Mendel allowed each variety of garden pea plants to self-pollinate for several **generations**. This method ensured that each variety was true-breeding for a particular trait; that is, all the offspring would display only one form of a particular **character**. For example, a true-breeding purple-flowering plant should produce only plants with purple flowers in subsequent generations.

These true-breeding plants served as the parental generation in Mendel's experiments. The parental generation, or P generation, is the first group of parents that are crossed in a breeding experiment.

**Step 2:** Mendel then cross-pollinated two P generation plants that had contrasting forms of a character such as purple flowers and white flowers. Mendel called the offspring of the P generation the first filial generation, or  $F_1$  generation. He then examined each  $F_1$  plant and recorded the number of  $F_1$  plants showing each trait.

**Step 3:** Finally, Mendel allowed the  $F_1$  generation to self-pollinate. He called the offspring of the  $F_1$  generation plants the second filial generation, or  $F_2$  generation. Again, each  $F_2$  plant was identified and counted.

### SKILL: READING EFFECTIVELY

Read each question, and write your answer in the space provided.

1. The prefix *gen-* means "begin." How does this apply to the Key Term *generation*?

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2. What information does the third sentence tell the reader?

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Active Reading *continued*

3. Describe the offspring of a true-breeding white-flowering plant.

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4. What is the P generation?

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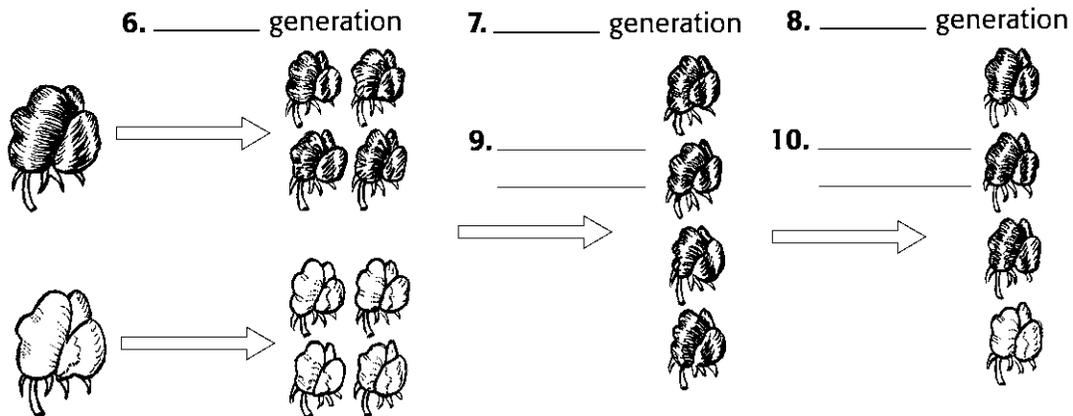
5. How does the Key Term *hybrid* apply to a monohybrid cross?

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**SKILL: INTERPRETING GRAPHICS**

The figure below shows three generations of plants. Insert the following labels in the spaces provided: cross-pollination, F<sub>1</sub>, F<sub>2</sub>, P, self-pollination.



In the space provided, write the letter of the phrase that best completes the statement.

- \_\_\_\_\_ 11. During the course of his first experiments, Mendel studied traits in
- one generation of plants.
  - two generations of plants.
  - three generations of plants.
  - more than five generations of plants.