

Name \_\_\_\_\_

Date \_\_\_\_\_

## Homework 6. 3: Mendel and Heredity

### KEY CONCEPT

Mendel's research showed that traits are inherited as discrete units.

### VOCABULARY

trait	purebred	law of segregation
genetics	cross	

**MAIN IDEA:** Mendel laid the groundwork for genetics.

**Fill in the blank with the word or phrase that best completes the sentence.**

1. Genetics is the study of biological \_\_\_\_\_ patterns and variation in organisms.
2. A man named Gregor \_\_\_\_\_ did early work that is the basis for much of our current understanding of genetics.
3. Mendel's views on inheritance differed from the views of many scientists of his time. Mendel recognized that \_\_\_\_\_ are inherited as discrete units.

**MAIN IDEA:** Mendel's data revealed patterns of inheritance.

**In designing his experiments, Mendel made three important choices that helped him see patterns of inheritance. The table below describes these choices and gives an example of how he put each choice into action. Match each choice with its example in the table.**

Mendel's Choices	Example
___ 4. Use of purebred plants	a. He removed the stamens and fertilized the pistil with pollen from a pea plant of his choice.
___ 5. Study of "either-or" traits	b. He experimented with self-pollinating, purebred pea plants.
___ 6. Control over breeding	c. He looked at traits that did not have intermediate characteristics such as pea shape, pea color, flower color, pod shape, pod color, flower position, and plant height.

Circle the word or phrase that best completes the statement.

7. Mendel used pea plants, because they reproduce **quickly / slowly**, and he could control how they **grow / mate**.
8. Mendel bred flowers resulting in F<sub>1</sub> generation with **dominant / recessive** phenotype. He then allowed the F<sub>1</sub> generation offspring to self-pollinate. This resulted in an F<sub>2</sub> generation with **dominant phenotypes only / both dominant and recessive phenotypes**.
9. Mendel concluded that traits are inherited as “discrete units.” Today, we call these discrete units **gametes / genes**.
10. Mendel’s law of segregation has two conclusions:
  - i. Organisms inherit **one copy / two copies** of each gene, one from each parent.
  - ii. Genes segregate during gamete formation, so organisms donate **one copy / two copies** of each gene in their gametes.

## Vocabulary Check

Circle the word or phrase that best completes the statement.

11. *Segregation* means “separation.” In Mendel’s law of segregation, it is the **gametes / genes** that are segregated, or separated.
12. “Purebred” means a line of organisms that has uniform **genetics / phenotype**