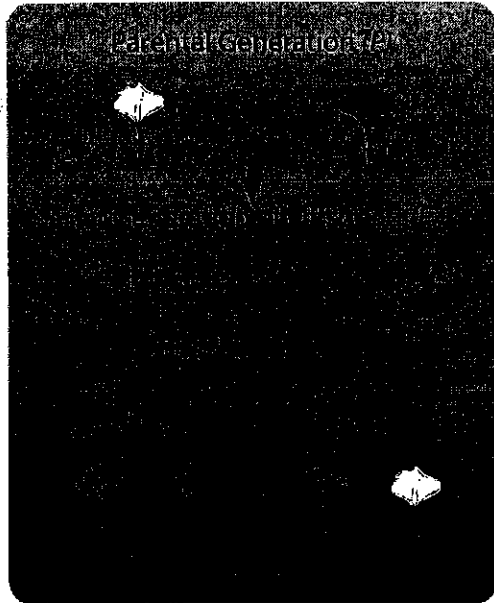


Name _____ Block _____ Group _____ Date _____

Read these passages from the text and answer the questions that follow.

Mendel's First Set of Experiments

At first, Mendel experimented with just one characteristic at a time. He began with flower color. As shown in the figure below, Mendel cross-pollinated purple- and white-flowered parent plants. The parent plants in the experiments are referred to as the P (for parent) generation.



This diagram shows Mendel's first experiment with pea plants. The F1 generation results from cross-pollination of two parent (P) plants. The F2 generation results from self-pollination of F1 plants.

F1 and F2 Generations

The offspring of the P generation are called the F1 (for filial, or "offspring") generation. As you can see from the figure above, all of the plants in the F1 generation had purple flowers. None of them had white flowers. Mendel wondered what had happened to the white-flower characteristic. He assumed some type of inherited factor produces white flowers and some other inherited factor produces purple flowers. Did the white-flower factor just disappear in the F1 generation? If so, then the offspring of the F1 generation — called the F2 generation — should all have purple flowers like their parents. To test this prediction, Mendel allowed the F1 generation plants to self-pollinate. He was surprised by the results. Some of the F2 generation plants had white flowers. He studied hundreds of F2 generation plants, and for every three purple-flowered plants, there was an average of one white-flowered plant.

Law of Segregation

Mendel did the same experiment for all seven characteristics. In each case, one value of the characteristic disappeared in the F1 plants and then showed up again in the F2 plants. And in each case, 75 percent of F2 plants had one value of the characteristic and 25 percent had the other value. Based on these observations, Mendel formulated his first law of inheritance. This law is called the **law of segregation**. It states that there are two factors controlling a given characteristic, one of which dominates the other, and these factors

separate and go to different gametes when a parent reproduces.

Questions

1. What did Mendel do in his first experiment?
2. What was the outcome of the F1 generation in Mendel's first experiment?
3. What was the outcome of the F2 generation in Mendel's first experiment?
4. Did Mendel repeat his initial experiment with other characteristics? What were his results?
5. Explain the law of segregation. Discuss the reasoning Mendel used to develop this law.