Genetics Name:

Counting Peas Period:

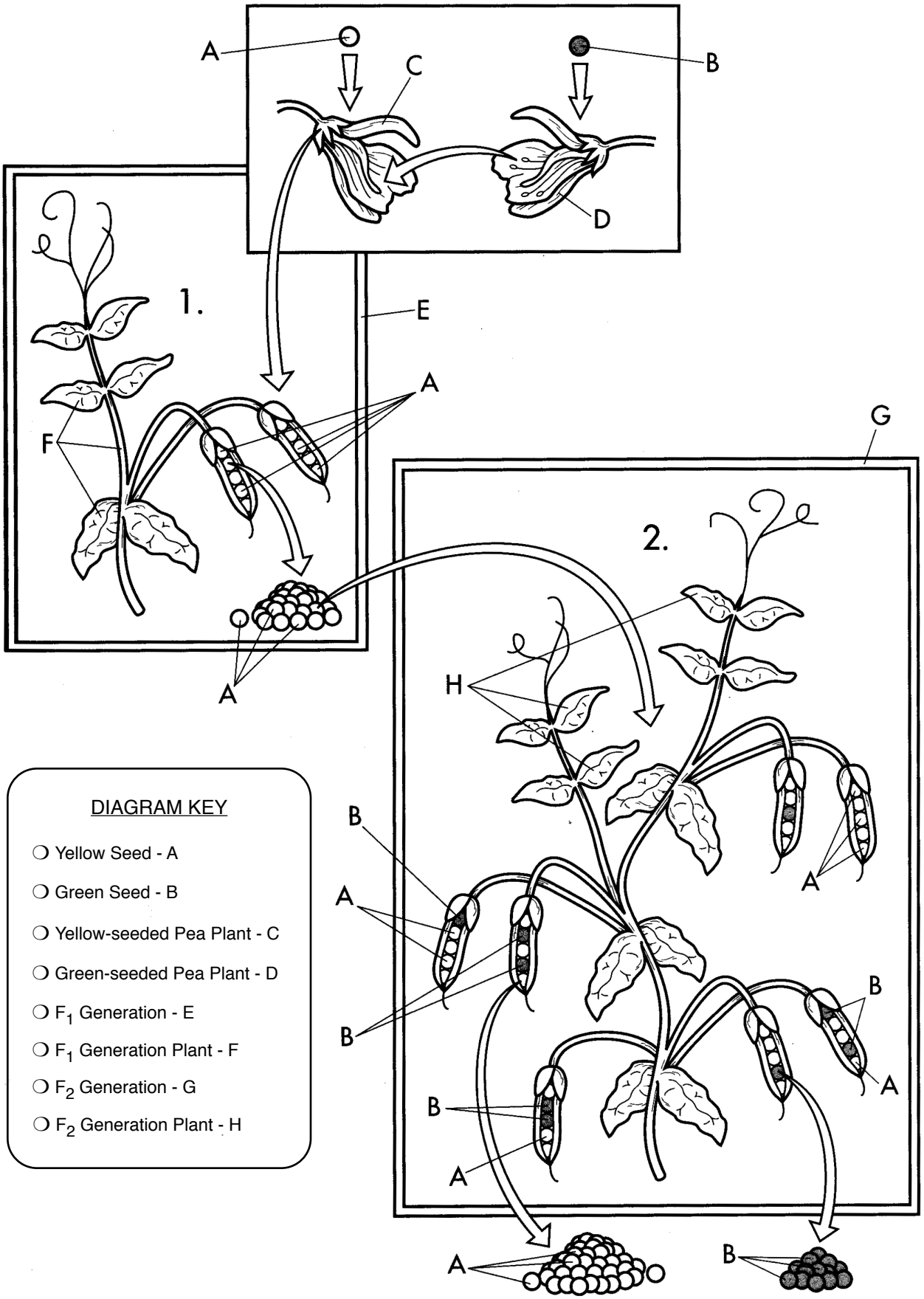

DIAGRAM KEY

- ❍ Yellow Seed - A
- ❍ Green Seed - B
- ❍ Yellow-seeded Pea Plant - C
- ❍ Green-seeded Pea Plant - D
- ❍ F_1 Generation - E
- ❍ F_1 Generation Plant - F
- ❍ F_2 Generation - G
- ❍ F_2 Generation Plant - H

7.2d; adapted from The Princeton Review Biology Coloring Book (1998) by I. Edward Alcamo

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Read the paragraphs and follow the instructions below to color-code the diagram and answer the questions. You can use Chapter 6, Section 1 of your book to help you.

As you know, Mendel spent a lot of time growing pea plants and moving pollen from one plant to another to mix their DNA. He would study only one characteristic at a time. In this particular example, you will see how Mendel studied the characteristic of seed color, but without waiting for weeks for the plants to grow. The traits he was observing and recording were yellow seed color and green seed color.

For each of the traits he was studying, Mendel chose true-breeding plants, so he would know what would happen if the plants self-pollinated. So, a plant with yellow seeds always made offspring plants with yellow seeds, and a plant with green seeds always made offspring plants with green seeds. But Mendel wanted to see what happened if he fertilized a yellow seed plant with pollen from a green seed plant. To do this, he removed the anthers of a yellow seed plant (thus preventing it from self-pollinating) and used pollen from a green seed plant to fertilize it. This blending of parents was referred to as a ***cross***.

• In the top box (the one with the flowers in it), color the yellow seed (A) yellow ☐, and the green seed (B) green ☐. The flowers here are from plants of the ***parent generation***.

• Mendel then planted the seeds created by the two parent plants, and they grew. All of these plants are called ***first generation plants***; they are given the code F_1. Color the box (E) around the F_1 plant orange ☐. All of the plants in the F_1 generation had yellow seeds. So, now color the yellow seeds (A) in the F_1 box yellow ☐.

• Now things started to get interesting. Mendel allowed the first generation plants (F_1) to self-pollinate (their pollen went on their own flowers) and fertilize themselves. This created ***second generation*** plants; they are given the code F_2. Color the box (G) around the F_2 plant purple ☐. The seed color trait that showed up was not what people expected. Most of the seeds were yellow, but some were green. Whatever made the seeds green (we now know this is caused by genes) *skipped* a generation. In the F_2 box, color the yellow seeds (A) yellow ☐, and color the green seeds (B) green ☐.

To describe the results of his experiments, Mendel introduced some terms that are still used today. He used the term ***dominant trait*** to refer to the trait that showed up in the F_1 generation. The other term he used to describe traits was ***recessive trait***, which was applied to the trait that disappeared in the F_1 generation, but then showed up again in later generations.

1. What was the characteristic that Mendel was observing for this experiment? _____

2. What two traits was Mendel keeping track of? _____ and _____

3. What cross did Mendel do for this experiment?

_____ with _____

4. For this experiment, what did Mendel determine was the dominant trait? _____

5. For this experiment, what did Mendel determine was the recessive trait? _____

6. When did the recessive trait first reappear? _____