LESSON 5

How Do Two Plants Reproduce?

You have learned that plants are made of cells, and each cell has chromosomes that hold the genetic code a cell needs to live and grow. But how do two plants join their genetic information to make new plants?

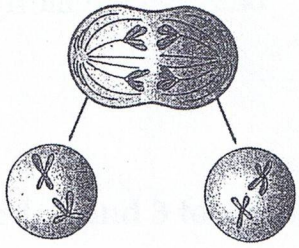
Before two plants can join their genetic information, a special process called **meiosis** happens in each plant. Meiosis produces special cells called **sex cells**. Female sex cells are called **eggs**. Male sex cells are called **sperm**. Sex cells have only half as many chromosomes as other cells.

Let's use a plant called a garden pea to understand meiosis. Remember that chromosomes come in pairs. In each cell that is not a sex cell, there are seven pairs of chromosomes, or fourteen chromosomes in all. But in a garden pea's sex cells, there is only one member from each chromosome pair. Each sex cell has only seven chromosomes.

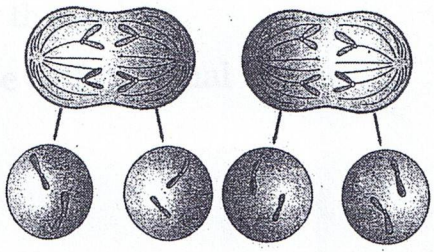
Meiosis has two stages. The first is like mitosis. The chromosomes copy themselves, then each cell divides to form two new cells. Each new cell has a full set of chromosomes. In the second stage of meiosis, both cells divide again. But this time, their chromosomes do not make copies of themselves. Now there are four sex cells that have only half the usual number of chromosomes, one from each pair.

When an egg and a sperm join, they form a **zygote**, the first cell of a new plant. When the sex cells from the garden pea plants join, they form a zygote with fourteen chromosomes. Half of the chromosomes come from the egg, and the other half from the sperm. The new combination, or collection, of chromosomes means that the new garden pea plant is like its parents in some ways, but different from its parents in other ways. For example, it might have larger flowers.

Meiosis, or Division to Form Sex Cells



The first division of cells results in two new cells, each with the full number of chromosomes.



The second division of cells results in four sex cells, each with half the number of chromosomes.

A.

Write True if the sentence is true. Write False if the sentence is false.

_____ 1. Meiosis produces special cells called sex cells.

_____ 2. Female sex cells are called eggs.

_____ 3. Male sex cells are called sperm.

_____ 4. Sex cells have twice as many chromosomes as other cells.

_____ 5. The first stage of meiosis results in four sex cells.

_____ 6. In a zygote, half of the chromosomes come from the egg, and the other half come from the sperm.

B.

The sentences below describe the steps in meiosis. Write 1, 2, and 3 to show the correct order.

_____ The cell divides to form two new cells. Each new cell has a full set of chromosomes.

_____ The chromosomes in the parent cell copy themselves.

_____ The cells divide again. The new cells have half the usual number of chromosomes.

C.

The sentences below describe the steps in plant reproduction. Write 1, 2, 3, and 4 to show the correct order.

_____ A zygote with a full set of chromosomes forms.

_____ A new plant begins to grow by mitosis.

_____ A sperm and an egg meet.

_____ The chromosomes of the sperm and egg join.

D.

Write one or more sentences to answer the question.

How can a new plant look like its parents but still be different?