

**Inquiry** MiniLab

**LESSON 1: 20 minutes**

**Which is the dominant trait?**

Imagine you are Gregor Mendel's lab assistant studying pea plant heredity. Mendel has crossed true-breeding plants with axial flowers and true-breeding plants with terminal flowers. Use the data below to determine which trait is dominant.

Pea Flower Location Results		
Generation	Axial (Number of Offspring)	Terminal (Number of Offspring)
First	794	0
Second	651	207

**Analyze and Conclude**

- Determine** which trait is dominant and which trait is recessive. Support your answer with data.

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-  **Key Concept** Analyze the first-generation data. What evidence do you have that one trait is dominant over the other?

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**Math Skills** **LESSON 1****Use Ratios**

A ratio is a comparison of two quantities. Imagine you have **15** pens and **3** pencils. The ratio of pens to pencils can be written in three ways: **15 to 3**, **15:3**, and  $\frac{15}{3}$ . Like a fraction, a ratio may be simplified. To simplify the ratio **15:3**, divide both terms by the greatest common factor, **3**. So, **15:3 = 5:1**.

A cross of two pea plants yields **400** seeds. You count **300** yellow seeds and **100** green seeds. What is the ratio of green seeds to yellow seeds?

Step 1 Write the ratio.

$$\text{green:yellow} = \mathbf{100:300}$$

Step 2 Divide by the greatest common factor to simplify.

$$\mathbf{100 \div 100 = 1, \text{ and } 300 \div 100 = 3.}$$

$$\mathbf{100:300 = 1:3}$$

The ratio of green to yellow seeds is **1:3**.

**Practice**

1. In a garden plot, you count 50 tall plants and 50 short plants. All the plants are offspring of the same two parent plants. What is the ratio of tall to short plants?
2. In a garden plot, you count 450 yellow-flowered plants and 1,350 white-flowered plants. All the plants are offspring of the same two parent plants. What is the ratio of white-flowered to yellow-flowered plants?
3. In a garden plot, you count 125 red-flowered plants and 125 pink-flowered plants. All the plants are offspring of the same two parent plants. What is the ratio of red-flowered to pink-flowered plants?
4. In a container of seeds, you count 35 dark-brown seeds and 105 light-brown seeds. All the seeds come from a cross between the same two parents. What is the ratio of dark-brown seeds to light-brown seeds?

**Key Concept Builder** 

**LESSON 1**

**Mendel and His Peas**

**Key Concept** Why did Mendel conduct cross-pollination experiments?

**Directions:** On the line before each definition, write the letter of the term that matches it correctly. Each term is used only once.

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|---|-------------------------------|
| _____ 1. the passing of traits from parents to offspring                                | <b>A.</b> self-pollination    |
| _____ 2. the study of how traits are passed on  | <b>B.</b> pistil              |
| _____ 3. when pollen from one plant lands on the pistil of a flower on the same plant   | <b>C.</b> pollen carriers     |
| _____ 4. when pollen from one plant reaches the pistil of a flower on a different plant | <b>D.</b> stamen              |
| _____ 5. bees, wind, and water  | <b>E.</b> heredity            |
| _____ 6. easily noted characteristics   | <b>F.</b> cross-pollination   |
| _____ 7. when offspring are the same as the parent                                      | <b>G.</b> true-breeding plant |
| _____ 8. source of pollen   | <b>H.</b> observable traits   |
| _____ 9. receiver of pollen   | <b>I.</b> genetics            |