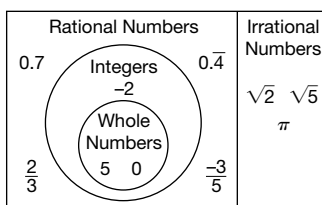


Name \_\_\_\_\_ Date \_\_\_\_\_

# The Real Number System (Pages 390–394)

You have studied whole numbers, integers, and rational numbers. Rational numbers include terminating and repeating decimals as well as the square roots of perfect squares. Numbers that do not terminate or repeat are called **irrational numbers**.

|                           |   |
|---------------------------|---|
| <b>Irrational Numbers</b> | An irrational number is a number that cannot be expressed as $\frac{a}{b}$ , where $a$ and $b$ are integers and $b$ does not equal 0. The square roots of numbers that are not perfect squares are irrational. You can use a calculator to find approximate square roots with numbers such as $\sqrt{11}$ and $\sqrt{27}$ . |
| <b>Real Numbers</b>       | The sets of rational and irrational numbers combine to form the set of <b>real numbers</b> . The graph of all real numbers is the entire number line.   |



### Try These Together

- Use the letters given below in the Practice exercises to name the set or sets of numbers to which 25 belongs.  
*HINT: You can write 25 as  $\frac{25}{1}$ .*
- Use the letters given below in the Practice exercises to name the set or sets of numbers to which  $\sqrt{47}$  belongs.  
*HINT: 47 is not a perfect square.*

### PRACTICE

Let  $R$  = real numbers,  $Q$  = rational numbers,  $Z$  = integers,  $W$  = whole numbers, and  $I$  = irrational numbers. Name the set or sets of numbers to which each number belongs.

3.  $-\frac{7}{12}$                       4. 0.272272227 ...                      5.  $-\sqrt{16}$

Find an estimate for each square root.

6.  $\sqrt{10}$                       7.  $-\sqrt{31}$                       8.  $\sqrt{77}$                       9.  $\sqrt{124}$



10. **Standardized Test Practice** You are building a fence around your mother's square garden. She has told you that she believes that the garden is about 250 square feet. About how many feet of fence must you purchase in order to enclose the entire garden?

- A** 15 ft                      **B** 16 ft                      **C** 50 ft                      **D** 63 ft

Answers: 1. W, Z, Q, R 2. I, R 3. Q, R 4. I, R 5. Z, Q, R 6. Q, R 7. -5.6 8. 8.8 9. 11.1 10. D