

# 2.7

## Find Square Roots and Compare Real Numbers

**Goal** • Find square roots and compare real numbers.

**Your Notes**

### VOCABULARY

Square root

Radicand

Perfect square

Irrational number

Real number

### SQUARE ROOT OF A NUMBER

**Words**

If  $b^2 = a$ , then \_\_\_ is a square root of \_\_\_.

**Numbers**

$5^2 = 25$  and  $(-5)^2 = 25$ , so \_\_\_ and \_\_\_ are square roots of 25.

**Your Notes**

All positive real numbers have two square roots, a positive and a negative square root. The positive square root is called the *principal* square root.

**Example 1** Find square roots

Evaluate the expression.

**Solution**

a.  $-\sqrt{36} = \underline{\hspace{2cm}}$

The negative square root of 36 is  $\underline{\hspace{2cm}}$ .

b.  $\sqrt{16} = \underline{\hspace{2cm}}$

The positive square root of 16 is  $\underline{\hspace{2cm}}$ .

c.  $\pm\sqrt{64} = \underline{\hspace{2cm}}$

The positive and negative square roots of 64 are  $\underline{\hspace{1cm}}$  and  $\underline{\hspace{1cm}}$ .

**Checkpoint** Evaluate the expression.

1.  $\sqrt{100}$

2.  $-\sqrt{1}$

**Example 2** Classify numbers

Tell whether each of the following numbers is a real number, a rational number, an irrational number, an integer, or a whole number:  $\sqrt{144}$ ,  $-\sqrt{49}$ ,  $\sqrt{32}$ .

**Solution**

Number	Real Number?	Rational Number?	Irrational Number?	Integer?	Whole Number?
$\sqrt{144}$					
$-\sqrt{49}$					
$\sqrt{32}$					

**Your Notes**

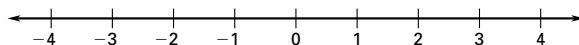
**Example 3** *Graph and order real numbers*

Order the numbers from least to greatest:

$$\sqrt{16}, \frac{5}{2}, \sqrt{4}, -3, -\sqrt{6}.$$

**Solution**

Graph the numbers on a number line.



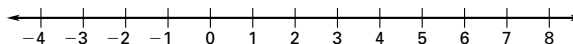
Read the numbers from left to right:

\_\_\_\_\_.

**Checkpoint** Complete the following exercises.

3. Tell whether each of the following numbers is a real number, rational number, irrational number, integer, or whole number:  $\sqrt{49}$ , 0,  $-\frac{6}{4}$ , -2,  $\sqrt{17}$ .

4. Order the numbers from Exercise 3 from least to greatest.



**Homework**