2.1 Use Integers and Rational Numbers

TEKS a.1; 8.1.A

Before You performed operations with whole numbers.

Now You will graph and compare positive and negative numbers.

Why? So you can compare temperatures, as in Ex. 58.

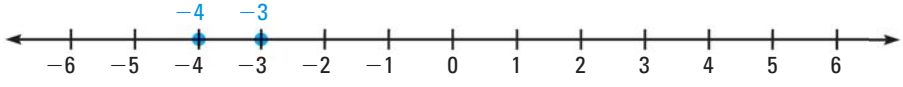
Key Vocabulary
- **whole numbers**
- **integers**
- **rational number**
- **opposites**
- **absolute value**
- **conditional statement**

Whole numbers are the numbers 0, 1, 2, 3, . . . and **integers** are the numbers . . . , −3, −2, −1, 0, 1, 2, 3, ... (The dots indicate that the numbers continue without end in both directions.) **Positive integers** are integers that are greater than 0. **Negative integers** are integers that are less than 0. The integer 0 is neither negative nor positive.

Zero is neither negative nor positive.

EXAMPLE 1 Graph and compare integers

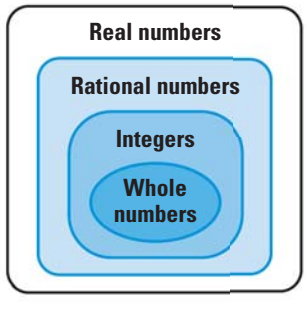
Graph −3 and −4 on a number line. Then tell which number is greater.



▸ On the number line, −3 is to the right of −4. So, $-3 > -4$.

RATIONAL NUMBERS The integers belong to the set of *rational numbers*. A **rational number** is a number $\frac{a}{b}$ where a and b are integers and $b \neq 0$. For example, $-\frac{1}{2}$ is a rational number because it can be written as $\frac{-1}{2}$ or $\frac{1}{-2}$. The rational numbers belong to the set of numbers called the *real numbers*.

READING
Although you can write a negative fraction in different ways, you usually write it with the negative sign in front of the fraction.



GUIDED PRACTICE for Example 1

Graph the numbers on a number line. Then tell which number is greater.

1. 4 and 0 **2.** 2 and −5 **3.** −1 and −6