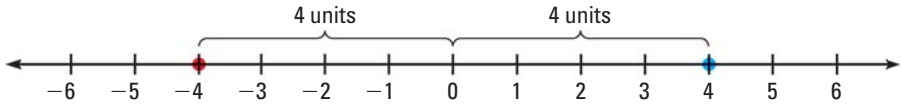
OPPOSITES Two numbers that are the same distance from 0 on a number line but are on opposite sides of 0 are called **opposites**. For example, 4 and −4 are opposites because they are both 4 units from 0 but are on opposite sides of 0. The opposite of 0 is 0. You read the expression $-a$ as "the opposite of a."



EXAMPLE 4 Find opposites of numbers

READING
Do not assume that $-a$ is a negative number. Notice that for $a = -2.5$, $-a = 2.5$.

a. If $a = -2.5$, then $-a = -(-2.5) = 2.5$.

b. If $a = \frac{3}{4}$, then $-a = -\frac{3}{4}$.

ABSOLUTE VALUE The **absolute value** of a number a is the distance between a and 0 on a number line. The symbol $|a|$ represents the absolute value of a.

KEY CONCEPT *For Your Notebook*

Absolute Value of a Number

Words If a is positive, then $\|a\| = a$.	**Example** $\|2\| = 2$
Words If a is 0, then $\|a\| = 0$.	**Example** $\|0\| = 0$
Words If a is negative, then $\|a\| = -a$.	**Example** $\|-2\| = -(-2) = 2$

EXAMPLE 5 Find absolute values of numbers

AVOID ERRORS
The absolute value of a number is never negative. If a number a is negative, then its absolute value, $-a$, is positive.

a. If $a = -\frac{2}{3}$, then $|a| = \left|-\frac{2}{3}\right| = -\left(-\frac{2}{3}\right) = \frac{2}{3}$.

b. If $a = 3.2$, then $|a| = |3.2| = 3.2$.

CONDITIONAL STATEMENTS A **conditional statement** has a hypothesis and a conclusion. An **if-then statement** is a form of a conditional statement. The *if* part contains the hypothesis. The *then* part contains the conclusion.

conditional statement

If a is a positive number, then $|a| = a$.

hypothesis — conclusion

In mathematics, if-then statements are either true or false. An if-then statement is true if the conclusion is always true when the hypothesis is satisfied. An if-then statement is false if for just one example, called a **counterexample**, the conclusion is false when the hypothesis is satisfied.