2.4 Multiply Real Numbers

TEKS a.1, a.6, A.4.B; 8.2.B

Before You added and subtracted real numbers.

Now You will multiply real numbers.

Why So you can calculate an elevation, as in Example 4.

Key Vocabulary
- **multiplicative identity**

In the activity on page 87, you saw that $a \cdot (-1) = -a$ for any integer a. This rule not only lets you write the product of a and -1 as $-a$, but it also lets you write $-a$ as $(-1)a$ and $a(-1)$. Using this rule, you can multiply any two real numbers. Here are two examples:

$$-2(3) = -1(2)(3) \qquad (-2)(-3) = -2(3)(-1)$$
$$= -1(6) \qquad = -6(-1)$$
$$= -6 \qquad = 6$$

KEY CONCEPT *For Your Notebook*

The Sign of a Product

Words The product of two real numbers with the *same* sign is positive.

Examples $3(4) = 12$ $\qquad -6(-3) = 18$

Words The product of two real numbers with *different* signs is negative.

Examples $2(-5) = -10$ $\qquad -7(2) = -14$

EXAMPLE 1 Multiply real numbers

Find the product.

a. $-3(6) = -18$ — Different signs; product is negative.

b. $2(-5)(-4) = (-10)(-4)$ — Multiply 2 and -5.

$= 40$ — Same signs; product is positive.

c. $-\frac{1}{2}(-4)(-3) = 2(-3)$ — Multiply $-\frac{1}{2}$ and -4.

$= -6$ — Different signs; product is negative.

MULTIPLY NEGATIVES
- A product is negative if it has an *odd* number of negative numbers.
- A product is positive if it has an *even* number of negative numbers.

GUIDED PRACTICE for Example 1

Find the product.

1. $-2(-7)$ **2.** $-0.5(-4)(-9)$ **3.** $\frac{4}{3}(-3)(7)$