

# 1.4 Lesson Multiplying Integers

## Multiplying Integers with the Same Sign

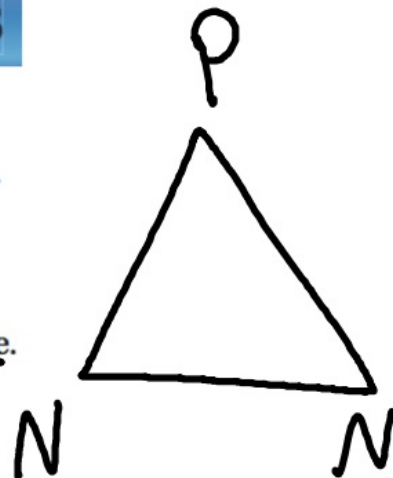
**Words** The product of two integers with the same sign is positive.

**Numbers**  $2 \cdot 3 = 6$        $-2 \cdot (-3) = 6$

## Multiplying Integers with Different Signs

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

**Numbers**  $2 \cdot (-3) = -6$        $-2 \cdot 3 = -6$



?

$$-4 \cdot 6 = -24$$

### EXAMPLE 1 Multiplying Integers with the Same Sign

Find  $-5 \cdot (-6)$ .

The integers have the same sign.

$$-5 \cdot (-6) = 30$$

The product is positive.

∴ The product is 30.

### EXAMPLE 2 Multiplying Integers with Different Signs

Multiply.

a.  $3(-4) = -12$

b.  $-7 \cdot 4$



∴ The product is -12.

∴ The product is -28.

### EXAMPLE 3 Using Exponents

a. Evaluate  $(-2)^2$ .

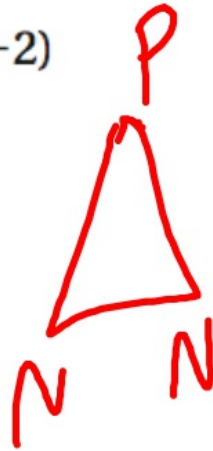
$$\begin{aligned}(-2)^2 &= (-2) \cdot (-2) \\ &= 4\end{aligned}$$

b. Evaluate  $-5^2$ .

$$\begin{aligned}-5^2 &= -(5 \cdot 5) \\ &= -25\end{aligned}$$

c. Evaluate  $(-4)^3$ .

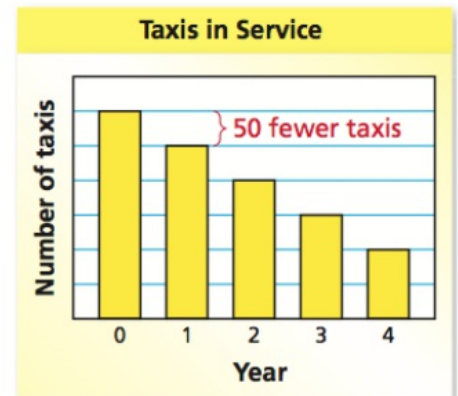
$$\begin{aligned}(-4)^3 &= (-4) \cdot (-4) \cdot (-4) \\ &= 16 \cdot (-4) \\ &= -64\end{aligned}$$



### EXAMPLE 4 Real-Life Application

The bar graph shows the number of taxis a company has in service. The number of taxis decreases by the same amount each year for four years. Find the total change in the number of taxis.

The bar graph shows that the number of taxis in service decreases by 50 each year. Use a model to solve the problem.



$$\text{Total change} = \text{Change per year} \cdot \text{Number of years}$$

$$= -50 \cdot 4$$

$$= -200$$

Use  $-50$  for the change per year because the number *decreases* each year.

∴ The total change in the number of taxis is  $-200$ .