

## Skills You'll Need

What is the base of the exponential expression  $x^y$ ?

$$\begin{array}{l}
 (-1)^4 \\
 (-1)(-1)(-1)(-1) \\
 \textcircled{1} \\
 -1^4 \\
 -1 \cdot 1^4 \\
 -1 \cdot 1 \cdot 1 \cdot 1 = -1
 \end{array}$$

$$\begin{array}{l}
 (-3)^2 \\
 (-3)(-3) \\
 \textcircled{9} \\
 -3^2 \\
 -1 \cdot 3^2 = -1 \cdot 9 = -9
 \end{array}$$

## 8th Grade

### Lesson 6-2: Exponents and Multiplication

#### Learning Goal:

- I can multiply powers with the same base.

#### What I Know:

#### What I Learned:

## Multiplying Powers with the Same Base

$$4^2 \cdot 4^4 = (4 \cdot 4) \cdot (4 \cdot 4 \cdot 4 \cdot 4) = 4^6$$

To multiply numbers or variables with the same base, add the exponents.

$$3^2 \cdot 3^7 = 3^{(2+7)} = 3^9$$

**Rule**

For any number  $a$  and integers  $m + n$ ,

$$a^m \cdot a^n = a^{(m+n)}$$

- Squared - a number taken to the second power

## Multiplying Powers

Write the expression using a single exponent...

$$(-2)^3 \cdot (-2)^5$$

$$(-2)^{3+5} = (-2)^8$$

## Quick Check

Write each expression using a single exponent...

$$6^2 \cdot 6^3$$

$$6^5$$

$$(-4)^1 \cdot (-4)^7$$

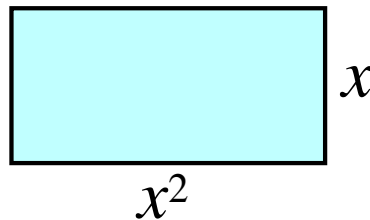
$$(-4)^8$$

$$3 \cdot 3^2 \cdot 3^3$$

$$3^6$$

## Application

Find the area of the rectangle.



$$A = lw$$

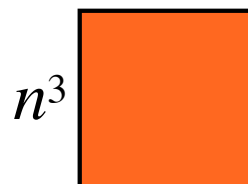
$$A = x \cdot x^2$$

$$A = x^3$$

## Quick Check

A square has a side length of  $n^3$ . Find the area of the square.

$$A = lw = n^3 \cdot n^3$$
$$A = n^6$$



# Assignment

## 8th Grade Lesson 6-2a

Pg. 186 #10-18 even