

## EXPONENTS

Review:  $4 \cdot 3$  means  $4 + 4 + 4$

Multiplication is simply a concise way of writing addition.

Similarly, exponents are a concise way of writing multiplication.

For the expression  $4^3$ , 4 is called the base and 3 is called the exponent.

$$\begin{aligned} \hookrightarrow 4^3 &= 4 \cdot 4 \cdot 4 \\ &= \underline{\hspace{2cm}} \end{aligned}$$

example 1: Evaluate  $\left(\frac{2}{3}\right)^2$

$$\hookrightarrow \left(\frac{2}{3}\right)^2 = \left(\frac{2}{3}\right)\left(\frac{2}{3}\right) = \underline{\hspace{2cm}}$$

example 2: Evaluate  $3^4$

$\hookrightarrow$

example 3:

a)  $(-2)^3$

↳

the base is \_\_\_\_\_

the exponent is \_\_\_\_\_

So,  $(-2)^3 = ( \quad )( \quad )( \quad )$

↳

= \_\_\_\_\_

b)  $(-2)^4$

↳

the base is \_\_\_\_\_

the exponent is \_\_\_\_\_

So,  $(-2)^4 = ( \quad )( \quad )( \quad )( \quad )$

↳

= \_\_\_\_\_

c)  $-2^4$

the base is 2

the exponent is 4

Note: The exponent does not apply to the negative sign since there aren't parenthesis like in part b.

↳

So,  $-2^4 = -( \quad )( \quad )( \quad )( \quad )$

= \_\_\_\_\_

example 4: Evaluate  $20 - 3^2$

Note: By the Order of Operations, we must first evaluate  $3^2$

$$\begin{aligned} \leadsto 20 - 3^2 &= 20 - \underline{\quad} \\ &= \underline{\quad} \end{aligned}$$

example 5:

a) What does  $4x$  mean?

$$\leadsto 4x =$$

b) What does  $x^4$  mean?

$$\leadsto x^4 =$$

# EXPONENTS Practice Problems

1. Evaluate:

a)  $2^5$

b)  $\left(\frac{1}{4}\right)^3$

2. Evaluate:

a)  $3^2$

b)  $(-3)^2$

c)  $-3^2$

d)  $(-3)^3$

3. Evaluate:  $16 - 2^4$

4. a) What does  $3x$  mean?

b) What does  $x^3$  mean?