

Exponents

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

$$4 \cdot 3 = 4 + 4 + 4$$

$$12 = 12$$

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 the 3 is called the **exponent**.

base ^{exponent}

$$4^3 = 4 \cdot 4 \cdot 4$$

$$= \underline{\quad}$$

Example 1:

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

$$\left(\frac{2}{3}\right)^2 = \left(\frac{2}{3}\right)\left(\frac{2}{3}\right) = \underline{\quad}$$

Example 2:

Evaluate: 3^4

$$= \underline{\quad}$$

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 parentheses 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 .

$$20 - 3^2 = 20 - \underline{\hspace{2cm}}$$
$$= \underline{\hspace{2cm}}$$

Example 5:

a) What does $4x$ mean?

$$4x =$$

b) What does x^4 mean?

$$x^4 =$$

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 $4x$ mean?

b) What does x^3 mean?