

TOPIC: EVALUATING EXPONENTS

Intro to Exponents

- ◆ When a number is multiplied by itself _____, it can be written using exponents.
 - ▶ The **base** is the number being _____ & the **exponent/power** is how many _____ the base is multiplied.

New

Exponent Notation

$$\underbrace{8 \cdot 8 \cdot 8 \cdot 8}_{\text{4 times}} = \text{" } \underline{\hspace{1cm}} \text{ to the } \underline{\hspace{1cm}} \text{ power"}$$

___ multiplied ___ times

$$\underbrace{b \cdot b \cdot b \cdot \dots \cdot b}_{\text{... times}} = \text{" } \underline{\hspace{1cm}} \text{ to the } \underline{\hspace{1cm}} \text{ power"}$$

___ multiplied ___ times

(General Exponent Notation)

EXAMPLE

Find the value of each exponential expression by rewriting as a product.

(A)	7^2	"7 _____"
(B)	10^3	"10 _____"
(C)	2^5	

- ◆ A number with *NO* exponent implies an exponent of ____, $b = b$ —.

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PRACTICE

Rewrite each product as an exponential expression.

(A) $3 \times 3 \times 3 \times 3 \times 3 \times 3 \times 3$

(B) $\left(\frac{2}{9}\right) \times \left(\frac{2}{9}\right) \times \left(\frac{2}{9}\right) \times \left(\frac{2}{9}\right) \times \left(\frac{2}{9}\right)$

PRACTICE

Evaluate the following.

(A) 13^1

(B) 7^3

(C) 2^8

EXAMPLE

Evaluate the following.

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

(B) $\left(\frac{7}{4}\right)^3$

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EXAMPLE

Write as an expression containing exponents.

$$(1.3)(1.3)(1.3)$$

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Exponential Expressions with Negative Bases

◆ Recall: Exponents are used to represent repeated multiplication. Ex. $2^4 = 2 \cdot 2 \cdot 2 \cdot 2 = 16$

► Negative numbers raised to an *even* power are _____ and negative numbers raised to an *odd* power are _____.

EXAMPLE

Find the value of each exponential expression by rewriting as a product.

(A) $(-2)^4$

(B) $(-3)^3$

(C) -5^2

◆ Note: $-a^n$ means ____ ($a \cdot a \cdot a \cdot \dots \cdot a$) ; it does NOT mean $-a \cdot -a \cdot -a \cdot \dots \cdot -a$.

PRACTICE

Evaluate the following expression.

(A) $(-4)^4$

(B) $(-11)^3$

(C) -2^2

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PRACTICE

Evaluate the following fractional or decimal expression.

(A) $\left(-\frac{1}{2}\right)^5$

(B) $(-0.6)^2$

EXAMPLE

Rewrite each product as an exponential expression and indicate whether the sign of the product would be negative or positive.

(A) $(-7) \cdot (-7) \cdot (-7) \cdot (-7) \cdot (-7)$

[POSITIVE | NEGATIVE]

(B) $(-10) \times (-10) \times (-10) \times (-10)$

[POSITIVE | NEGATIVE]