Date: _____

Learning Goal

Exponential Basics

Expanded Form

A number to an exponent is just that number _____ by itself.

To write $(b)^n$ in expanded form, _____

___ by itself ___ times.

Examples

a. $3^7 =$

b. $-4^6 =$

c. $(-4)^6 =$

d. $3.2^4 =$

Exponential Basics

On a Calculator

To evaluate a number to an exponent on your calculator, use the _____ button.

Examples

a. $3^7 =$

b. $-4^6 =$

c. $(-4)^6 =$

d. $3.2^4 =$

Exponential Basics

Fractions Raised to Exponents

A fraction raised to an exponent is just that fraction _____ by itself.

$$\left(\frac{b}{c}\right)^n =$$

a. $\left(\frac{1}{2}\right)^3 =$

b. $\left(\frac{3}{4}\right)^2 =$

c. $\left(\frac{-2}{5}\right)^3 =$

d. $\left(\frac{-2}{5}\right)^4 =$

The Exponent Laws

1. The Product Rule

2. The Quotient Rule

3. The Power of a Power Rule

1. The Product Rule

What is $6^3 \times 6^4$?

What is $4^3 \times 4^6$?

What is $5^3 \times 5^2$?

When multiplying two powers with the

same base, ___ ___ ___ **the exponents**

2. The Quotient Rule

What is $5^5 \div 5^2$?

What is $4^7 \div 4^3$?

What is $6^8 \div 6^6$?

When dividing two powers with the **same base**,

__ __ __ __ __ __ __ __ **the exponents**

3. The Power of a Power Rule

What is $(6^3)^4$?

What is $(4^3)^6$?

What is $(5^3)^2$?

When raising a power to an exponent

__ __ __ __ __ __ __ __ **the exponents**

Combining the Exponent Laws

Use **GEMA**

1. Deal with **G**roupings
2. Deal with **E**xponents
3. Deal with **M**ultiplication and Division
4. Deal with **A**ddition and Subtraction

$$\frac{(4 \times 4^4)(4^5)^3}{(4^3 \times 4^6)^2}$$

Combining the Exponent Laws

Simplify. Show your steps!

$$\frac{(3^7 \times 3)^2 (3^2)^3}{(3^2 \times 3^3)^4}$$