Warm-up 1-29

Evaluate the following expressions.

1. $2(x + 4) =$

2. $2(3)(3)(5) =$

3. $(4)(4)(4) =$

4. 3^3

Warm-up 1-29

Evaluate the following expressions.

1. $2(x + 4)$ =

$2x + 8$

2. $2(3)(3)(5)$ =

90

3. $(4)(4)(4)$ =

64

4. 3^3

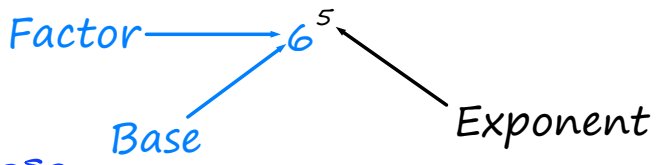
$3 \cdot 3 \cdot 3 = 27$

Section 7.1~ Integer Exponents

What is an integer?

-a positive or negative whole number

A power is a number with a base and an exponent



$6 \cdot 6 \cdot 6 \cdot 6 \cdot 6$

The base is a repeated factor and the exponent tells how many times the base is multiplied by itself.

Powers are written as:

x^4

8^5

Expanded form:

$x \cdot x \cdot x \cdot x$

$8 \cdot 8 \cdot 8 \cdot 8 \cdot 8$

Verbal form:

x to the power of four

eight raised to the fifth power

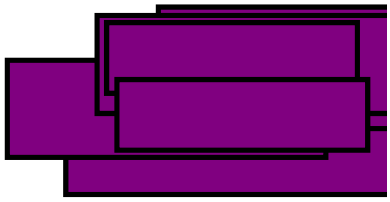
Practice: Write each in expanded form and find the value.

$3^3 = 3 \cdot 3 \cdot 3$ $7^4 = 7 \cdot 7 \cdot 7 \cdot 7$ $12^2 = 12 \cdot 12$

$2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 = 2^6$

Discovery Activity!

Exponent Rules



Product Rule- $x^m x^n = x^{m+n}$

Power Rule- $(x^m)^n = x^{mn}$

Power of a Product Rule- $(xy)^n = x^n y^n$

Quotient Rule- $\frac{x^m}{x^n} = x^{m-n}$

Power of a Quotient Rule- $\left(\frac{x}{y}\right)^n = \frac{x^n}{y^n}$

Definitions:

Zero Exponent- $x^0 = 1$

Exponent Definition- $x^n = xxxxx...$ $(n\text{-times})$

Monomials

A monomial is an algebraic expression that is either a constant, a variable, or the product of a constant and variable. The constant is called the **coefficient**.

Homework

2B-None (buyout)

3B, 4B-write two examples from each exponent rule and prove that your answer is correct