Math 9 Lesson 2-1 Introduction to Exponents

What is a faster way to calculate the value of the following?

3 +3 +3 + 3 +3 +3 + 3 +3 +3 + 3 +3

You learned that repeated addition can be simplified by the process of multiplication:

(3) x 11 in other words, group of 3, 11 times = 33

We use the notation of multiplication to streamline and simplify the process.

Now we are going to learn how to simplify the process for repetitive multiplication by using **powers**.

There are special terms for each part of a **power**

Example: expanded form 5 x 5 x 5

exponent

53

Power form: 53

Standard form: 125

base

A number raised to the power of 2 is usually referred to as `**squared**`

A number raised to the power of 3 is usually referred to as `**cubed`**

Examples: 1. **Writing Powers**

Write the following as a power

1. 2 x 2 x 2 x 2 x 2 x 2 b) 5

**2. Evaluating Powers:**

Write as repeated multiplication and in **standard form** (calculate the numeric value of the power)

1. 33 b) 84

**3. Evaluating Expressions Involving Negative Signs**

We need to be especially careful where negatives are concerned…

A power can be negative, or a base can be negative or both…but it means we do different things with the numbers.

Identify the base of each power, then evaluate the power.

1. (-3)4 b) -34 c) –(-3)4

Note\*\*\*We may write the product of integer factors without the multiplication signs

Ex. (-3) x (-3) x(-3) x(-3) = (-3) (-3) (-3) (-3)

4. Common Mistake

Is 34 the same as 43? Why or why not? (tip\* you can show this using expanded form)

Assignment: Page 55 #7-9 (a,c,e for each) 11, 13-14, 18, 20