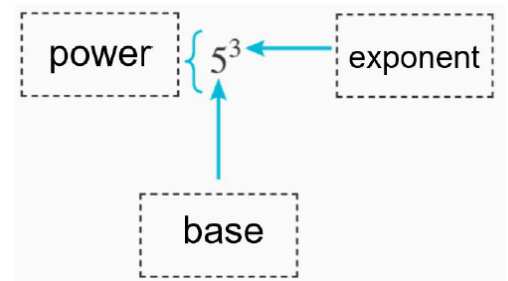


Name: _____ Class: _____ Date: _____

Instruction: Exponents

Read through the vocabulary.

- 1) An **exponent**
 - tells how many times a number is repeated using multiplication
- 2) The **base**
 - the number that is used as a factor
- 3) A **power**
 - an expression that has two parts: base and an exponent
- 4) **Expanded form**
 - the expression represented as repeated multiplication
- 5) **Exponential form**
 - the expression is simplified and uses exponents



So, using the above, write what each of the following means.

1. Five to the exponent two. _____ What is that equal to? _____
How can that be written in expanded form? _____

2. Three to the third exponent. _____ What is that equal to? _____
How can that be written in expanded form? _____

3. Two to the exponent five. _____ What is that equal to? _____
How can that be written in expanded form? _____

You might hear exponents expressed as “Three to the power of four” for example. This would represent 3^4 .

Remember that exponents are very different than multiplication – Exponents are 'Repeated Multiplication' and represent VERY different numbers.

Let's compare some numbers:

What is the difference in value for each of the pairs of numbers?

$5 \times 3 = \underline{\hspace{2cm}}$ $5^3 = \underline{\hspace{2cm}}$

*Often, to help with not making a mistake, exponents are written in expanded form. So, 5^3 will be written as $5 \times 5 \times 5$ first.

$9^2 =$ _____ $=$ _____
Expanded form value

$$2^9 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Expanded form
value

From this last example, you should see how powerful exponents are.

One more thing to note is that base 10 exponents have the trick that the exponent is the same as the number of zeros. Try these:

$$10^3 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Expanded form value

$$10^7 = \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

Expanded form
value