Created by Mr. Lischwe

Warmup 1/$(3^2 + 2^3)$

YOU ARE NOT ALLOWED TO USE A CALCULATOR FOR THIS WARMUP!!!

1) Guess: what do you think 22^3 is?
2) Guess: what do you think 3^{22} is?
3) Guess: what do you think 2^0 is?
4) Guess: what do you think 4^{-2} is?

5) Make up your own exponent problem that equals $\mathbf{20x^{12}}$.

2) 5^9

4) h^{36}

6) 5^8

8) $1{,}331c^{12}$

10) $64m^{30}n^{66}$

14) Length x width x height

$=3w^4 \cdot 3w^4 \cdot 3w^4$

$= 27w^{12}$

20) x = 5

21) x = 3

22)

To simplify $(2a^3)(4a^6)$, multiply 2 times 4, keep the a, and add 3 + 6.

To simplify $(2a^3)^6$, do 2 to the 6th power, and multiply 3 x 6.

p. 35 (2-10 even, 14, 20, 21)

Corrections People

1. Correct **on back** in a **different color**, then get them checked by me.
2. If correct, do all 3 problems of exit ticket redo. Get this checked by me as well.
3. If correct, try challenge problem.

All Correct People

1. Attempt challenge problem, then get it checked by me.
2. If correct, become a "student helper" and help other people at your table.

Yesterday's Problems:

1) $8x^4 \cdot 4x^8$ **2)** $\frac{16y^7}{8y}$ **3)** $(3z^5)^3$

Corrections/Extension

$x^8 \cdot x^2$ $(x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x) \cdot (x \cdot x)$ $= x^{10}$

$8x^8 \cdot 2x^2$ $(8 \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x) \cdot (2 \cdot x \cdot x)$ $= 16x^{10}$

$\frac{y^8}{y^2}$ $\frac{y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y}{y \cdot y}$ $= y^6$

$\frac{8y^8}{2y^2}$ $\frac{8 \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y \cdot y}{2 \cdot y \cdot y}$ $= 4y^6$

$(x^8)^2$ $(x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x) \cdot (x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x)$ $= x^{16}$

$(8x^8)^2$ $(8 \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x) \cdot (8 \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x \cdot x)$ $= 64x^{16}$

Let's Review:

Table of Contents (2nd Semester)

Zero & Negative Exponents

Objective:

Discover how zero & negative exponents work

- You and your elbow partner will be working on the TOP HALF of the exploration page.
- This exploration will help you figure out how ZERO EXPONENTS work.

$$\frac{5^4}{5^4}$$

Answer using the shortcut? 5^0

Answer doing it the long way? 1

Zero Exponents

$$\frac{x^3}{x^3}$$

Answer using the shortcut?

Answer doing it the long way?

Zero Exponents

» Find a pattern and use it to complete the table:

Exponential Form	Standard Form
2^4	16
2^3	8
2^2	4
2^1	2
2^0	____
2^{-1}	____
2^{-2}	____
2^{-3}	____
2^{-4}	____

Finding a pattern

›

$$x^6 \cdot \boxed{1} = x^6$$

$$x^6 \cdot \boxed{x^0} = x^6$$

The “invisible 1”

- Any time you expand a power, there is really an “invisible 1” being multiplied by everything.

$$3^4 = 1 \cdot 3 \cdot 3 \cdot 3 \cdot 3$$

- You don’t need to write the 1 when you expand, but if you understand that it is there, it will make some things we learn later make MUCH more sense.
- $2d^3 = 1 \cdot 2 \cdot d \cdot d \cdot d$

$5^0 = 1 \cdot \cancel{5 \cdot 5 \cdot 5}$

For 5^0, there are no 5's, but the invisible 1 is still there!!!

The "invisible 1"

Zero Exponents:

» Anything to the zero power is 1!

Examples

1) 9^0

2) $\frac{a^6}{a^6}$

3) $4x^0$

4) $\left(\frac{8x^3y^2}{0.27abc} + 12.5q\right)^0$

Zero Exponents

- a^0 is NOT simplified!!! You must continue and put 1 to get full credit.