NEED BOOK TODAY!

- Also, we will take 5-10 minutes of PUP to look at the report cards and your TNReady score reports from last year.

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Warmup 1/$(3^2 - 9 + 7 + 2)$

1. If a = -3, b = 6, and c = -4, evaluate the expression.

$$a^3 - b^2 + 5c^2$$

2. Explain how $(-5)^{10}$ and -5^{10} would be different. (You don't have to work them out; just explain the difference.)

p. 19 (1-3, 5, 7, 9-12)

1. $(-5)^4$
2. $3^2 \cdot 5 \cdot q^3$
3. m^5
5. $\frac{1}{81}$
7. **8,000,000,000 (8 billion)**
9. **-311**
10. **37**
11. **16**
12. **10**

9) $g^5 - h^3$
$(2)^5 - (7)^3$
$32 - 343$
-311

10) $c^2 + d^3$
$(8)^2 + (-3)^3$
$64 + (-27)$
37

11) $a^2 \cdot b^6$
$\left(\frac{1}{2}\right)^2 \cdot (2)^6$
$\frac{1}{4} \cdot 64$
16

12) $(r - s)^3 + r^2$
$(-3 - (-4))^3 + (-3)^2$
$(1)^3 + 9$
10

Multiplying & Dividing Powers

Objective:
Use exponent rules to simplify expressions

The Rules…

Multiplying Powers with the same base
- Keep the base, add the exponents

Dividing Powers with the same base
- Keep the base, subtract the exponents

TRY IT WITH NUMBERS…

$2^3 \cdot 2^2$

$\frac{2^6}{2^3}$

$2^1 = 2$
$2^2 = 4$
$2^3 = 8$
$2^4 = 16$
$2^5 = 32$
$2^6 = 64$
$2^7 = 128$
$2^8 = 256$

EXAMPLES: MULTIPLYING

1. $a^{45} \cdot a^{22}$ a^{67}
2. $6^5 \cdot 6^3$ 6^8
3. $x^3 \cdot y^5 \cdot y^2 \cdot x$ $x^4 \cdot y^7$
4. $12j^5 \cdot 3j^2$ $12 \cdot j \cdot j \cdot j \cdot j \cdot j \cdot 3 \cdot j \cdot j = 36j^7$

EXAMPLES: DIVIDING

1. $\frac{a^{45}}{a^{22}}$ a^{23}
2. $\frac{6^5}{6^3}$ 6^2
3. $\frac{x^3y^5}{xy^2}$ $x^2 \cdot y^3$
4. $\frac{12j^5}{3j^2}$ $\frac{12 \cdot j \cdot j \cdot j \cdot j \cdot j}{3 \cdot j \cdot j} = 4j^3$

- ***WHEN YOU HAVE COEFFICIENTS, MULTIPLY OR DIVIDE THEM JUST LIKE NORMAL NUMBERS!!!***

CAREFUL…

- $\frac{7x^5}{7x^3}$
- $\frac{7^5}{7^3}$

HELPFUL HINT

- **WHEN IN DOUBT, EXPAND IT OUT!!!**

A LITTLE HARDER…

1. $4a^2b^3 \cdot 7a \cdot 2b^5$

$= 4 \cdot a \cdot a \cdot b \cdot b \cdot b \cdot 7 \cdot a \cdot 2 \cdot b \cdot b \cdot b \cdot b \cdot b$

$= 56a^3b^8$

2. $\frac{6c^5 \cdot 3d^7}{9cd^4}$

$= \frac{6 \cdot c \cdot c \cdot c \cdot c \cdot c \cdot 3 \cdot d \cdot d \cdot d \cdot d \cdot d \cdot d \cdot d}{9 \cdot c \cdot d \cdot d \cdot d \cdot d}$

$= \frac{18 \cdot c^4 \cdot d^3}{9}$ $= 2c^4d^3$

SUPER-CRAZY EXAMPLE

Simplify:

$$\frac{-2a^6 \cdot 6b^3 \cdot a \cdot 4b^5}{18b^4 \cdot a^5 \cdot 3b^2}$$

HOMEWORK

- Textbook p. 27 (1-6, 8, 12, 14-18)

Table of Contents (2nd Semester)

Power to a Power

Objective:

Simplify expressions like $(x^5)^3$

CHALLENGE

- We are going to learn a new exponent rule today.
- Once again, I am not going to tell you the rule right away. I want to see if you can figure it out.
- I am going to display a bunch of problems on the board. Try to figure out how to do these problems. Then use them to figure out the rule for taking a power to a power.

Taking a power to a power

$(x^3)^4$ $(a^5)^2$ $(p^1)^6$

$(m^5n^2)^3$ $\left(\frac{b}{c^3}\right)^4$

$(3y^4)^2$ $\left(\frac{k^7}{4}\right)^3$

After you solve these, come up with some **rules** that you discover about how to take a power to a power.

2 ways to show $(a^5)^2$

Way 1

$(a^5)^2$

$= (a^5)(a^5)$

$= a^{10}$

Way 2

$(a^5)^2$

$= (a \cdot a \cdot a \cdot a \cdot a)^2$

$= (a \cdot a \cdot a \cdot a \cdot a)(a \cdot a \cdot a \cdot a \cdot a)$

$= a^{10}$

Taking a Power to a Power

- Keep the base, multiply the exponents