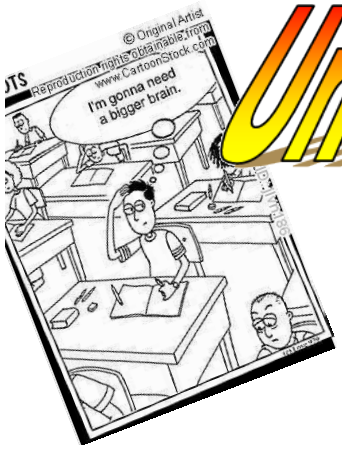

Unit 2 Test Review

Warm Up

http://www.youtube.com/watch?v=dQ9A-o3dUlM

1) Simplify then Evaluate

$$\left(\frac{9}{3}\right)^4 - 2^5 \times 2^9 \div 2^6$$

$(3)^4 - 2^{14} \div 2^6$

$(3)^4 - 2^8$

$81 - 256$

$= -175$

$\Rightarrow \frac{9^4}{3^4} - 2^8$

Test Outline

- Unit 2: Powers and the Exponent Laws

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Study Guide

Powers

Base
Exponent
Repeated Multiplication
The Zero Exponent
Powers of ten
Expanded form to Standard form and vice versa

Order of Operations

BEDMAS

Exponent Laws

Product of Powers
Quotient of Powers
Power of a Power
Power of a Product
Power of a Quotient

Exponent Laws

1) Zero Rule

-Anything raised to the exponent of zero is 1

$(-5)^0 = 1$ or $(x)^0 = 1$

2) Product of Powers Rule

When you multiply like bases you add the exponents

$(2)^3 \times (2)^5 = (2)^8$ or $(a)^m \times (a)^n = (a)^{m+n}$

3) Quotient Rule

When you divide like bases you Subtract the exponents

$\frac{(-4)^7}{(-4)^5} = (-4)^2$ or $(a)^m \div (a)^n = (a)^{m-n}$

4) Power to a Power Rule

With a power to a power we multiply exponents

$(2^5)^3 = (2)^{15}$ or $(a^m)^n = (a)^{mn}$

5) Power of Product Rule

With a power of products we multiply exponents

$[(5^5) \times (6^4)]^3 = 5^{15} \times 6^{12}$

or $[(a^m) \times (b^n)]^p = (a)^{mp} \times (b)^{np}$

6) Power of Quotient Rule

With a power of quotient we multiply exponents

$\left[\frac{(-3)^6}{(5)^3}\right]2 = \frac{(-3)^{12}}{(5)^6}$

Simplify

$$\frac{(3^2)^6 \times (4^6)^4 \times (3^4)^5 \times (4^2)^7}{(4^3)^5 \times (3^4)^3 \times (4^9)^2 \times (3^2)^6}$$

$$\frac{(3^{12})(3^{20})}{(3^{12})(3^{12})} \times \frac{4^{24} \times 4^{14}}{4^{15} \times 4^{18}}$$

$$\frac{3^{32}}{3^{24}} \times \frac{4^{38}}{4^{33}}$$

$$3^8 \times 4^5$$

Unit 2 Test Review

1) Write the BASE and the EXPONENT of these powers:

a) 3^5

Base: 3

Exponent: 5

b) $(-2)^8$

Base: -2

Exponent: 8

c) -6^7

Base: 6

Exponent: 7

2) Write the following as the respecting base:

a) $1296 = 6^{?}$

6
216
6
36
6 6
6^4

b) $512 = 2^{?}$

2^9

3)Write the following in standard form

$(6 \times 10^4) + (7 \times 10^2) + (9 \times 10^5) + (4 \times 10^0)$

$10^5 \quad 10^4 \quad 10^3 \quad 10^2 \quad 10^1 \quad 10^0$

9 6 0 7 0 4

4) Write the following numbers using powers of 10

530 281

$10^5 \quad 10^4 \quad 10^3 \quad 10^2 \quad 10^1 \quad 10^0$

$(5 \times 10^5) + (3 \times 10^4) + (2 \times 10^2) + (8 \times 10^1) + (1 \times 10^0)$

5) Simplify then evaluate

a) $[-(3)^2]^5 =$

$-(3)^{10}$

$= -59049$

b) $5^7 \cdot 5^3 - 2^4 \times 2^3$

$5^4 - 2^7$

$625 - 128$

$= 497$

c) $(-3)^1 \times (-3)^2 + (-3)^5 \cdot (-3)^0$

$(-3)^3 + (-3)^5$

$-27 + (-243)$

$= -270$