Math 9 This week

Monday--Section 2.5

Tuesday--Open book on 2.4/2.5

---More practice with section 2.5

Wednesday/Thursday-Practice for test

Friday-Chapter 2 Test

Warm-Up

Oct. 26/15

Use exponent laws

Simplify then evaluate

$3^5 \times 3^2 \div 4^7 \div 4^2$

$3^{5+2} \div 4^{7-2}$

$3^7 \div 4^5$

$2187 \div 1024$

2.14

13. a) $2^5 - 2^6$

b) $3^3 + 2^6$

c) $4^2 - 3^1 + 2^3$

d) $(-3)^1 - (-3)^2$

e) $(-2)^4(-2)^2 + (-2)^4$

$(-2)^6 + (-2)^4$

f) $-2^4(2^6 \div 2^2) - 2^4$

$-2^4(2^4) - 2^4$

$2^8 - 2^4$

g) $(-5)^1 + (-5)^1$

Fill in the following chart

Power	As Repeated Multiplication	As a Product of Factors	As a power	As a product of Powers
$(5^2)^3$	$5^2 \times 5^2 \times 5^2$	$5\times5\times5\times5\times5\times5$	5^6	
$[(-2)^3]^2$	$(-2)^3 \times (-2)^3$	$(-2)(-2)(-2)(-2)(-2)(-2)$	$(-2)^6$	
$(7\times2)^3$ $(7^1\times2^1)^3$	$(7\times2)\times(7\times2)\times(7\times2)$	$7\times2\times7\times2\times7\times2$ OR $2\times2\times2\times7\times7\times7$		$2^3\times7^3$
$((-3)\times5)^2$	$((-3)\times5)\times((-3)\times5)$	$-3\times-3\times5\times5$		$(-3)^2\times5^2$

Exponent Law for a power of a power.

$(a^m)^n$ ($m \times n$)

To raise a power to a power

MULTIPLY the exponents!

Simplify: [Express as a single power]

a) $(-3^4)^3$ $\quad -3^{12}$

b) $(2^2)^3$ $\quad 2^6$

c) $(-2^4)^6$ $\quad -2^{24}$

d) $((-2)^5)^3$ $\quad (-2)^{15}$

Exponent Law for a Product of Powers

$$(ab)^m = a^m b^m$$

The variables "a" and "b" are any integer, except 0.

The variable "m" is any whole numbers.

Write as a product of powers

a) $(5^3 \times 3^2)^3$

$5^9 \times 3^6$

$(5^3)^3$

5^9

Write as a Product of Powers

b) $(3^5 \times (-2)^4)^0$

$3^0 \times (-2)^0$

c) $(2^6 \times 3^4)^2$

$2^{12} \times 3^8$

Quotient of Powers

1 Write below as a repeated multiplication.

$$\left(\frac{4}{5}\right)^3 = \frac{4}{5} \times \frac{4}{5} \times \frac{4}{5} = \frac{4 \times 4 \times 4}{5 \times 5 \times 5} = \frac{4^3}{5^3}$$

2. Look at the numerators and denominators can you express them as asingle power

Exponent Law for a Quotient of Powers

$$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$

The variables "a" and "b" are any integer, except 0.

The variable "m" is any whole numbers.

Write as a quotient of powers:

a) $\left(\frac{4^3}{3^4}\right)^4 = \frac{4^{12}}{3^{16}}$

b) $\left(\frac{3^8}{6^3}\right)^2 = \frac{3^{16}}{6^{12}}$

Simplify $\left(\frac{3^8}{3^2}\right)^2$ → Use exponent laws! → $\frac{3^{16}}{3^4} = 3^{12}$

→ $(3^6)^2$

3^{12}

use exponent laws!

Simplify then Evaluate

$$(5^3 \times 2^3) + (2^8 \div 2^5)^4$$

$5^3 \times 2^3 + (2^{32} \div 2^{20})$

$5^3 \times 2^3 + 2^{12}$

$5^3 \times 2^3 + (2^3)^4$

$5^3 \times 2^3 + 2^{12}$

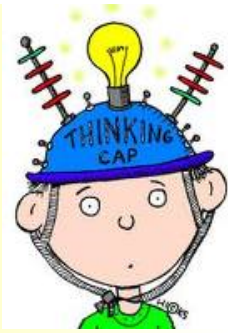
$125 \times 8 + 4096$

$1000 + 4096$

5096

Simplify

$$(6^2 \times 7)^2 + (3^8 \div 3^6)^3$$



$6^4 \times 7^2 + (3^2)^3$

$6^4 \times 7^2 + 3^6$

$6^4 \times 7^2 + (3^{24} \div 3^{18})$

$6^4 \times 7^2 + 3^6$

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Simplify
Evaluate

4, 5, 6, 7,9,11, 14[a,c,e,g]

4. a) $(6 \times 4)^3$

$6^3 \times 4^3$

5. a) $(8 \div 5)^3$

$8^3 \div 5^3$

6a) $(3^2)^4$

3^8