Kickoff

Complete the participation paper on your desk and return it to the front. Get your class notes too!

Lesson 4.2- SWBAT use the laws of exponents to rewrite expressions.

Product Rule: When multiplying monomials that have the same base, add the exponents.

$x^m \cdot x^n = x^{m+n}$ add

Example 1: $x \cdot x^3 \cdot x^4 = x^{1+3+4} = x^8$

Example 2: $(2x^2y)(-3x^3y^4) = 2 \cdot (-3) \cdot x^2 \cdot x^3 \cdot y \cdot y^4 = -6x^5y^5$

Power Rule: When raising monomials to powers, multiply the exponents.

$(x^m)^n = x^{mn}$ multiply

Example 3: $(x^2y^3)^4 = x^{2\cdot4}y^{3\cdot4} = x^8y^{12}$

Example 4: $(2x^3yz^2)^3 = 2^3x^{3\cdot3}y^3z^{2\cdot3} = 8x^9y^3z^6$

Quotient Rule: When dividing monomials that have the same base, subtract the exponents.

$\frac{x^m}{x^n} = x^{m-n}$ subtract!

Example 5: $\frac{x^3}{x^{-2}} = x^{3-(-2)} = x^5$

Example 6: $\frac{5^5}{5^1} = 5^{5-1} = 5^4$

Example 7: $\frac{36m^3n^5}{-9mn^4} = \frac{36}{-9}\cdot\frac{m^3}{m}\cdot\frac{n^5}{n^4} = -4m^2n$

Simplify each of the following.

1) $a \cdot a^2 \cdot a^3$ a^6

2) $(2a^2b)(4ab^2)$ $8a^3b^3$

3) $(6x^2)(-3x^5)$

4) $b^3 \cdot b^4 \cdot b^7 \cdot b$

5) $(3x^3)(3x^4)(-3x^2)$

6) $(2x^2y^3)^2$ $2^2x^4y^6$

7) $(5x^2y^4)^3$ $5^3x^6y^{12}$

8) $(6x^4y^6)^3$

9) $(4x^3y^3)^3$

10) $(7xy)^2$

Evaluate it:

$4x^4y^6$

11) $\frac{x^3}{x}$ x^2

12) $\frac{18c^3}{-3c^2}$ $-6c$ or $-6c$

13) $\frac{9a^2b^5}{-3ab^2}$

14) $\frac{-48c^2d^4}{-8cd}$

15) $\frac{22y^6z^8}{2yz^{-2}}$

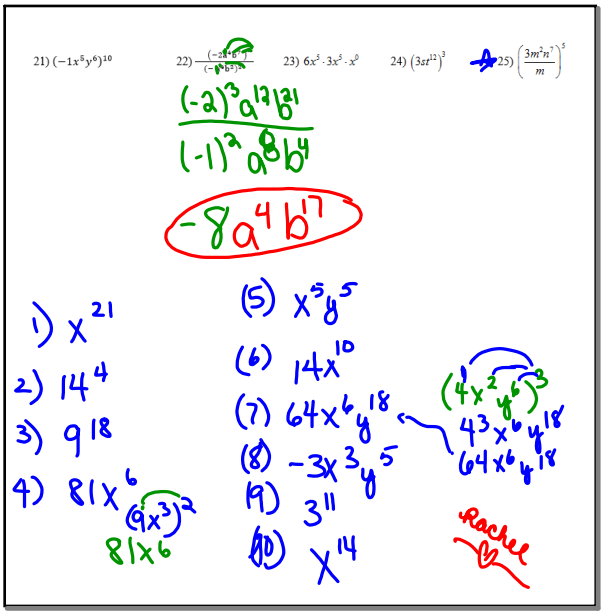
16) $x^2 \cdot x^7$

17) $(x^2)^7$

18) $(-2x^4)^5$

19) $\frac{-28a^6b^{-4}c^6}{7a^{11}b^{-9}c^6}$

20) $(7ab)(-1a^4b^3)^2(2a^5b^6)$ $(7ab)((-1)^2a^8b^6)(2a^5b^6)$ $14a^{14}b^{13}$


21) $(-1x^5y^6)^{10}$
22) $\frac{(-2a^6b^{-7})^3}{(-1a^2b^5)^2}$
23) $6x^5 \cdot 3x^3 \cdot x^0$
24) $(3st^{12})^3$
25) $\left(\frac{3m^2n^{-7}}{m}\right)^5$
$\frac{(-2)^3a^{18}b^{21}}{(-1)^2a^8b^4}$
$-8a^4b^{17}$
1) x^{21}
2) 14^4
3) 9^{18}
4) $81x^6$
$(9x^3)^2$
$81x^6$
(5) x^5y^5
(6) $14x^{10}$
(7) $64x^6y^{18}$
(8) $-3x^3y^5$
(9) 3^{11}
(10) x^{14}
$(4x^2y^6)^3$
$4^3x^6y^{18}$
$64x^6y^{18}$
Rachel