

**1A-BE** WEDNESDAY 3-23-11

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①  $(5xy^5)(-3xy^{10}) = ?$

②  $[(7^2)]^5 = ?$

③  $[(-4)^2]^3 = ?$

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• Homework review: Pg 413 # 29, 30

THE 3<sup>RD</sup> EXPONENT RULE:

$$\textcircled{\text{EX}} \quad (3x)^2 = (3x)(3x) \\ = 3 \cdot 3 \cdot x \cdot x = 3^2 x^2$$

$$(3x)^2 = 9x^2$$

↑                    ↑  
SEE THE SHORTCUT?

$$\textcircled{\text{EX}} \quad \left(\frac{5}{y}\right)^2 = \left(\frac{5}{y}\right)\left(\frac{5}{y}\right) = \frac{25}{y^2}$$

$$\left(\frac{5}{y}\right)^2 = \frac{25}{y^2}$$

SEE THE PATTERN?

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GROUP TO A POWER RULE

When RAISING A group to A power,  
RAISE EACH number or variable in the group to the power.

$$\boxed{\left(\frac{ab}{c}\right)^N = \frac{a^N b^N}{c^N}}$$

$$\textcircled{\text{Ex}} \quad (4ab)^2 = ?$$

$$4^2 a^2 b^2 = \boxed{16a^2 b^2}$$

$$\textcircled{\text{Ex}} \quad \left(\frac{2}{3}\right)^3 = ?$$

$$\frac{2^3}{3^3} = \frac{2 \cdot 2 \cdot 2}{3 \cdot 3 \cdot 3} = \boxed{\frac{8}{27}}$$

$$\textcircled{\text{Ex}} \quad \left(\frac{5x}{6}\right)^2 = ?$$

$$\boxed{\frac{25x^2}{36}}$$

$$\textcircled{\text{Ex}} \quad \left(\frac{1}{2}xy^4\right)^2$$

$$\frac{1^2}{2^2} x^2 y^8 = \boxed{\frac{1}{4} x^2 y^8}$$

To simplify a monomial:

- ① Each base should only appear ONCE.
- ② Simplify all powers to a power (by multiplying exponents)
- \* ③ Simplify fractions if possible.

\* NOT NEW INFORMATION

EX 5  
PG 412

Simplify

$$\left(\frac{1}{3}xy^4\right)^2 [(-6y)^2]^3$$

$$\frac{1^2}{3^2}x^2y^8 \cdot [(-6)^2(y^2)]^3$$

$$\frac{1}{9}x^2y^8 \cdot [36y^2]^3$$

$$\frac{1}{9}x^2y^8 \cdot 36^3y^6$$

$$\frac{1}{9} \cdot 36^3 x^2 y^{14} = \frac{36^4}{9} x^2 y^{14}$$

$$\boxed{5184x^2y^{14}}$$

$$\begin{array}{r} 36 \\ 36 \\ \hline 216 \\ 108 \\ \hline 1296 \\ 4 \\ \hline 5184 \end{array}$$

# Group Practice:

Pg. 413 # 33-36

Bonus # 40

Homework: memorize the 3 exponent rules we covered this week

MR  
(MULT. RULE)  $\boxed{a^N \cdot a^M = a^{N+M}}$  ex)  $3^5 3^{10} = 3^{15}$

PPR  
(POWER TO POWER RULE)  $\boxed{(a^N)^M = a^{N \cdot M}}$  ex)  $(3^5)^{10} = 3^{50}$

GPR  
(GROUP TO A POWER RULE)  $\boxed{\left(\frac{ab}{c}\right)^N = \frac{a^N b^N}{c^N}}$  ex)  $\left(\frac{3x}{5}\right)^2 = \frac{9x^2}{25}$