USE SEPARATE SHEETS FOR WORK

NAME _____ DATE _____ PERIOD _____ 1B

8-3

Study Guide and Intervention

Scientific Notation + Monomials

Products and Quotients with Scientific Notation You can use properties of powers to compute with numbers written in scientific notation.

Example 1 **Evaluate $(6.7 \times 10^3)(2 \times 10^{-5})$. Express the result in scientific and standard notation.**

$(6.7 \times 10^3)(2 \times 10^{-5})$	$= (6.7 \times 2)(10^3 \times 10^{-5})$	Associative Property
	$= 13.4 \times 10^{-2}$	Product of Powers
	$= (1.34 \times 10^1) \times 10^{-2}$	$13.4 = 1.34 \times 10^1$
	$= 1.34 \times (10^1 \times 10^{-2})$	Associative Property
	$= 1.34 \times 10^{-1}$ or 0.134	Product of Powers

The solution is 1.34×10^{-1} or 0.134.

LOOK: CALCULATOR NOT NEEDED, USE A SIDE CALCULATION FOR (6.7×2) IF NEEDED

Example 2 **Evaluate $\frac{1.5088 \times 10^8}{4.1 \times 10^5}$. Express the result in scientific and standard notation.**

$\frac{1.5088 \times 10^8}{4.1 \times 10^5}$	$= \left(\frac{1.5088}{4.1}\right)\left(\frac{10^8}{10^5}\right)$	Associative Property
	$= 0.368 \times 10^3$	Quotient of Powers
	$= (3.68 \times 10^{-1}) \times 10^3$	$0.368 = 3.68 \times 10^{-1}$
	$= 3.68 \times (10^{-1} \times 10^3)$	Associative Property
	$= 3.68 \times 10^2$ or 368	Product of Powers

The solution is 3.68×10^2 or 368.

LOOK: CALCULATORS OK FOR THE $\frac{1.5088}{4.1}$

Exercises

Evaluate. Express each result in scientific and standard notation.

1. $\frac{1.4 \times 10^4}{2 \times 10^2}$
2. $\frac{3 \times 10^{-12}}{2 \times 10^{-15}}$
3. $(3.2 \times 10^{-2})(2.0 \times 10^2)$
4. $\frac{1.2672 \times 10^{-8}}{2.4 \times 10^{-12}}$
5. $(7.7 \times 10^5)(2.1 \times 10^2)$
6. $\frac{9.72 \times 10^8}{7.2 \times 10^{10}}$

(7) $[(4^2)^3]^2$ (8) $\left(\frac{4}{5}a^2\right)^2$ (9) $(4cd)^2(-3d^2)^2$

(10) $(2ag^2)^4(3a^2g^3)^2$ (11) $(2m^2N^3)^3(3m^3N)^2$

(12) WRITE THE DEFINITION OF A MONOMIAL