

1.3 Multiply and Divide Monomials - page 24

A **monomial** is a number, a variable, or a product of a number and one or more variables. You can use the Laws of Exponents to simplify monomials.

example $\rightarrow 3x^2$

PRODUCT OF POWERS EXAMPLES

If common bases, **add** the exponents. Then, simplify.

power: { 9^3 $\leftarrow$ exponent
Got it? $\leftarrow$ base

#1 $5^2 \cdot 5^1$
 $5 \cdot 5 \cdot 5 \rightarrow 5^3$
 $5 = 5^1$
*same
 $\neq 125$

a.) $9^3 \cdot 9^2$
 $9 \cdot 9 \cdot 9 \cdot 9 \cdot 9$
 $9^{3+2} = 9^5$

b.) $a^3 \cdot a^2$
 $a \cdot a \cdot a \cdot a \cdot a$
 $3+2$
 a^5

c.) $-2m^1(-8m^5)$
 $(-2 \cdot -8)(m^1 \cdot m^5)$
 $16m^6$

QUOTIENT OF POWERS EXAMPLES - page 25

If common bases, **subtract** the exponents.

Example #4

$$\frac{4^8}{112} \rightarrow 4^{8-2} = 4^6$$

$$\frac{4^2}{4^2} \rightarrow 4^0 = (4^0)$$

$$\frac{4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4 \cdot 4}{4 \cdot 4}$$

$$\frac{4}{4} = 1$$

Let's do D and G together!

d.) $\frac{5^7}{5^4} \rightarrow 5^{7-4}$
 $\rightarrow 5^3$

$$(125)$$

g.) $\frac{3^4 \cdot 5^2 \cdot 7^5}{3^2 \cdot 5 \cdot 7^3}$

*group by common bases

$$\left(\frac{3^4}{3^2} \right) \left(\frac{5^2}{5^1} \right) \left(\frac{7^5}{7^3} \right)$$

*subtract exponents

$$3^{4-2}$$

$$5^{2-1}$$

$$7^{5-3}$$

*simplify

$$3^2 \cdot 5 \cdot 7^2$$

$$(2205)$$

$$e.) \frac{x^{10}}{x^3} \quad x^{10-3}$$

$$(x^7)$$

$$f.) \frac{12w^5}{2w} \rightarrow \left(\frac{12}{2}\right)\left(\frac{w^5}{w}\right)$$

$$(6w^4)$$

$$h.) \frac{5^6 \cdot 7^4 \cdot 8^3}{5^4 \cdot 7^2 \cdot 8^2}$$

*group by
common
base

$$\left(\frac{5^6}{5^4}\right) \left(\frac{7^4}{7^2}\right) \left(\frac{8^3}{8^2}\right)$$

5^{6-4} 7^{4-2} 8^{3-2}

$$5^2 \cdot 7^2 \cdot 8 = (9800)$$

$$i.) \frac{(-2)^5 \cdot 3^4 \cdot 5^7}{(-2)^2 \cdot 3 \cdot 5^4}$$

$$\left(\frac{-2^5}{-2^2}\right) \left(\frac{3^4}{3}\right) \left(\frac{5^7}{5^4}\right)$$

$$(-2)^3 \cdot 3^3 \cdot 5^3$$

$$(-27000)$$