

8.4 - More Multiplication of Exponents

Vocabulary:

1 **EXAMPLE** Simplify $(a^3)^4$.

Simplify :

$$\left(C^5 \right)^2$$

$$C^{10}$$

2 **EXAMPLE** Simplify $b^2(b^3)^{-2}$.

7.

$$\left(t^2\right)^{-2} \left(t^2\right)^{-5}$$

3 EXAMPLE Simplify $(4x^3)^2$.

$$4^2 \cdot (x^3)^2$$

$$16x^6$$

13.

$$\left(6y^2\right)^2$$

$$6^2 (y^2)^2$$

$$36y^4$$

4 EXAMPLE Simplify $(4xy^3)^2(x^3)^{-3}$.

$$\begin{array}{c} 4^2 \quad x^2 \quad y^6 \quad x^{-9} \\ \hline 16x^{-7}y^6 \\ \hline \frac{16y^6}{x^7} \end{array}$$

21.

$$(3b^{-2})^2 \cdot (a^2b^4)^3$$

$$9b^{-4} \cdot a^6b^{12}$$

$$9a^6b^8$$

5 EXAMPLE An object has a mass of 10^2 kg. The expression

$10^2 \cdot (3 \times 10^8)^2$ describes the amount of resting energy in joules the object contains. Simplify the expression.

$$10^2 \cdot (3 \times 10^8)^2$$

$$10^2 \cdot 9 \times 10^{16}$$

$$9 \times 10^{18}$$

Homework: pg. 449 #4, 6, 10, 14, 22, 26, 28, 41, 45, 48, 51, 78

4) 9^{100}

6) $d^{15} \cdot d^0$
 d^{15}

10) $1024m^5$

14) $81n^{24}$

22) $(2a^2c^4)^{-5} (c^{-1}a^7)^6$

$2^{-5} a^{-10} c^{-20} c^{-6} a^{42}$

$(2^{-5} a^{32} c^{-26})$

$\frac{a^{32}}{2^5 c^{26}} = \frac{a^{32}}{32c^{26}}$

26) $2^3 \times 10^{-9}$
 8×10^{-9}

28) 36×10^{24}
 3.6×10^{25}

41) the 2nd student

45) $25x^2 + 5x^2$
 $30x^2$

48) $(3^7)^2 \cdot (3^{-4})^3$
 $3^{14} \cdot 3^{-12}$
 $3^2 = 9$

51) a) $2x \cdot 2x$
 $4x^2 \cdot 6$
 $24x^2$

$4x \cdot 4x$
 $16x^2 \cdot 6$
 $96x^2$

b) 4 times larger

c) $2x \cdot 2x \cdot 2x$
 $8x^3$
 $4x \cdot 4x \cdot 4x$
 $64x^3$

d) 8 times as large

78) (1, 8)