

8.3 Practice A

Date _____ Period _____

8.3 INTRODUCTION TO CONVERTING NEGATIVE TO POSITIVE EXPONENTS.

Simplify. Answer using only positive exponents.

$$1) \frac{4x^1}{8x^4} = \frac{1x^{1-4}}{2} = \frac{x^{-3}}{2} = \boxed{\frac{1}{2x^3}}$$

$$2) \frac{3x^2}{4x^{-4}} = \frac{3x^{2-(-4)}}{4} = \boxed{\frac{3x^6}{4}}$$

$$3) \frac{4n^2}{2n^{-4}} = \frac{2n^{2-(-4)}}{1} = \boxed{2n^6}$$

$$4) \frac{3x^{-3}}{7x^{-1}} = \frac{3x^{-3-(-1)}}{7} = \frac{3x^{-2}}{7} = \boxed{\frac{3x^2}{7}}$$

$$5) \frac{6x^{-3}}{8x} = \frac{3x^{-3-1}}{4} = \frac{3x^{-4}}{4} = \boxed{\frac{3}{4x^4}}$$

$$6) \frac{5v^{-2}}{8v^3} = \frac{5v^{-2-3}}{8} = \frac{5v^{-5}}{8} = \boxed{\frac{5}{8v^5}}$$

$$7) \frac{3x^{-4}}{9x^2} = \frac{1x^{-4-2}}{3} = \frac{x^{-6}}{3} = \boxed{\frac{1}{3x^6}}$$

$$8) \frac{3n^{-2}}{n^{-3}} = \frac{3n^{-2-(-3)}}{1} = \frac{3n}{1} = \boxed{3n}$$

$$9) \frac{5x^{-4}}{6x^4} = \frac{5x^{-4-4}}{6} = \frac{5x^{-8}}{6} = \boxed{\frac{5}{6x^8}}$$

$$10) \frac{2x^{-2}}{3x^{-4}} = \frac{2x^{-2-(-4)}}{3} = \boxed{\frac{2x^2}{3}}$$

Rule for Division for the same base
 is to subtract exponents

Ex $\frac{x^{10}}{x^4} = x^{10-4} = \boxed{x^6}$

NAQ.c.3 Evaluate complex numeric expressions with whole number exponents demonstrating the ability to use the product, power, and quotient properties

#'s 11-14, SHOW THE FOLLOWING WORK - (1) SHOW +, -, * EXPONENTS, (2) EXPAND, then (3) EVALUATE

11) $\frac{10^7}{10^2}$

$10^{7-2} = 10^5 = \boxed{100,000}$

12) $\frac{(-12)^7}{(-12)^5}$

$(-12)^{7-5} = (-12)^2 = \boxed{144}$

remember (-)'s with negative #'s !!

13) $\frac{(-18)^4}{(-18)^4}$

$(-18)^{4-4} = (-18)^0 = \boxed{1}$

14) $((-2)^3)^3$

$(-2)^{3 \cdot 3} = (-2)^9 = \boxed{-512}$

REVIEW EXPONENTS WITH NUMBERS AND VARIABLE. Simplify. Clearly show work.

15) $(3b^3)^4$ $3^4 \cdot b^{3 \cdot 4}$ ← required work
 $\boxed{81b^{12}}$

16) $\frac{3x^2}{(4x)^0}$ $\rightarrow 1$
 $\boxed{3x^2}$

17) $\left(\frac{2n^4}{n^2}\right)^3$ 2 methods to simplify
option 1
 $\frac{2^3 n^{4 \cdot 3}}{n^{2 \cdot 3}} = \frac{8n^{12}}{n^6} = \boxed{8n^{12-6}} = \boxed{8n^6}$

18) $\left(-\frac{3y^2}{4x^3}\right)^3 = \frac{(-3)^3 y^{2 \cdot 3}}{4^3 x^{3 \cdot 3}} = \boxed{\frac{-27y^6}{64x^9}}$

19) $(3x^0y^3)^2$
 $3^2 x^{0 \cdot 2} y^{3 \cdot 2} = 9x^0y^6 = \boxed{9y^6}$

20) $(5xy^4)^3 = 5^3 x^{1 \cdot 3} y^{4 \cdot 3}$
 $\boxed{125x^3y^{12}}$

21) $(-x^4y^3)^4$ implied -1
 $(-1)^4 x^{4 \cdot 4} y^{3 \cdot 4} = \boxed{x^{16}y^{12}}$
 $(-1)^4 = 1$ (even)

22) $(-x^2)^3$ implied -1
 $(-1)^3 x^{2 \cdot 3} = \boxed{-x^6}$
 $(-1)^3 = -1$ (odd)

23) $(-12x^3y^2)^0$
anything to the 0 is 1 -->
 $(-12)^0 \cdot x^{0 \cdot 3} y^{0 \cdot 2} = \boxed{1}$

24) $(-5x^4y^3)^2$
 $(-5)^2 x^{4 \cdot 2} y^{3 \cdot 2} = \boxed{25x^8y^6}$

25) $(-3x^4y^0)^4$
 $(-3)^4 x^{4 \cdot 4} y^{0 \cdot 4} = 81x^{16}y^0 = \boxed{81x^{16}}$

26) $(-4x^3y^2)^3$
 $(-4)^3 x^{3 \cdot 3} y^{2 \cdot 3} = \boxed{-64x^9y^6}$