

NAME: \_\_\_\_\_ PERIOD: \_\_\_\_\_ DATE: \_\_\_\_\_

# Homework Problem Set

Simplify each expression so that there are no negative exponents.

1.  $(xy^2)^0$

$1$

2.  $(x^2)^3$

$x^6$

3.  $\left(\frac{2y}{x}\right)^2$

$\frac{2^2 y^2}{x^2} = \frac{4y^2}{x^2}$

4.  $(abc^{-1})^{-1}$

$a^{-1}b^{-1}c^1 = \frac{c}{ab}$

5.  $\frac{a^2b^4c^{-2}}{ab^3c^2}$

$abc^{-4} = \frac{ab}{c^4}$

6.  $\left(\frac{a^{-2}}{b^3}\right)^{-4}$

$\frac{a^8}{b^{-12}} = a^8b^{12}$

7.  $\left(\frac{m^4}{n^{-2}}\right)^3$

$\frac{m^{12}}{n^{-6}} = m^{12}n^6$

8.  $\frac{m^{-1}n^0p^2}{m^2n^{-1}p^3}$

$m^{-3}n^1p^{-1} = \frac{n}{m^3p}$

9.  $(mnp^3)^{-2}$

$m^{-2}n^{-2}p^{-6} = \frac{1}{m^2n^2p^6}$

10.  $\frac{d^3e^2f}{d^{-3}e^{-2}f^{-1}}$

$d^6e^4f^2$

11.  $d^3 \cdot d^2 \cdot d^{-4}$

$d^{3+2-4} = d$

12.  $\frac{e^3 \cdot e^2}{e^7 e^{-4}}$

$\frac{e^{3+2}}{e^{7-4}} = \frac{e^5}{e^3} = e^{5-3} = e^2$

13.  $\frac{a^3b^4}{a^{-2}b^{-1}}$

$a^5b^5$

14.  $(a^{-3}b^{-3})^0$

$1$

15.  $\frac{2m^3 \cdot m^2}{m^{-3}}$

$2m^5m^3 = 2m^8$

$$16. \frac{(x^{-3})^4 x^4}{2x^{-3}}$$

$$\frac{x^{-12} \cdot x^4}{2x^{-3}} = \frac{x^{-8}}{2x^{-3}} = \frac{x^{-8-(-3)}}{2}$$

$$= \frac{x^{-5}}{2} = \boxed{\frac{1}{2x^5}}$$

$$17. (x^{-2}x^{-3})^4$$

$$x^{-8} \cdot x^{-12} = x^{-20} = \boxed{\frac{1}{x^{20}}}$$

$$18. \frac{2x^4y^{-4}z^{-3}}{3x^2y^{-3}z^4}$$

$$\frac{2x^2y^{-1}z^{-7}}{3} = \boxed{\frac{2x^2}{3yz^7}}$$

$$19. \frac{3m^{-4}}{m^3}$$

$$3m^{-7} = \boxed{\frac{3}{m^7}}$$

$$20. (2x^2)^{-4}$$

$$2^{-4}x^{-8} = \frac{1}{2^4x^8} = \boxed{\frac{1}{16x^8}}$$

$$21. \frac{3n^4}{3n^3}$$

$$\frac{\cancel{3}n^4}{\cancel{3}n^3} = \boxed{n}$$

Determine what integer can be placed in the blank to make the statement true.

$$22. \left(\frac{a^3b^2}{b^{-3}}\right)^4 = \frac{a^{12}}{b^{-20}}$$

$$\frac{a^{12}b^8}{b^{-12}} = a^{12}b^{20} = \frac{a^{12}}{b^{-20}}$$

$$23. (a^4b^{-2})^{-3} = \left(\frac{b^2}{a^4}\right)^{\boxed{3}}$$

$$a^{-12}b^6 = \frac{b^6}{a^{12}}$$

$$24. a^{-2}b^3 = \frac{a^2}{a^{\boxed{4}}b^{-3}}$$

$$25. (a^3b^5)^0 = \frac{a^{\boxed{3}}}{a^{\boxed{3}}b^{\boxed{0}}}$$

## Spiral REVIEW—Order of Operations

26. **Four Number Game:** Use the numbers 1, 2, 3 and 4 no more than once for each problem. You may use any operations including powers and parentheses. You may NOT create a 2-digit number ( $1 \text{ \& } 2 \neq 12$ ). For example, if the number was 10, then we could do any of the following:  $1 + 2 + 3 + 4 = 10$  or  $2 \cdot 3 + 4 = 10$  or  $3^2 + 1 = 10$ . *Answers may vary*

A. The number is 12:  $3 \cdot 4$

B. The number is 15:  $3 \cdot (4+1)$

C. The number is 25:  $(4+1)^2$

D. The number is 32:  $4 \cdot (3+1) \cdot 2$

27. Think about order of operations to insert parentheses to make each statement true. If you are having trouble remembering the Order of Operations, watch the YouTube video by Math Antics <https://www.youtube.com/watch?v=dAgfnK528RA>.

A.  $(2 + 3) \times 4^2 + 1 = 81$

B.  $(2 + 3) \times (4^2 + 1) = 85$

C.  $2 + 3 \times 4^2 + 1 = 51$

*No parentheses needed.*

D.  $2 + [3 \times (4^2 + 1)] = 53$