Principles of Algebra Name/Date Clee / Today

ALL PROBLEMS CAN BE COMPLETED ON THIS WORKSHEET

WS 10D.2 – More Negative and Zero Exponents

#1-3, Evaluate each expression for $a = -2$, $b = 3$, $c = -5$. Easier to simplify FIRST.

1. $16a^{-3}c^2$

$= \frac{16c^2}{a^3}$

$= \frac{16(-5)^2}{(-2)^3} = \frac{16(25)}{-8}$

$= \boxed{-50}$

2. $(-a^0bc^3)^2$

$= 1 \cdot 1 \cdot b^2 \cdot c^6$

$= b^2c^6$

$= (3)^2(-5)^6$

$= 9 \cdot 15625$

$= \boxed{140625}$

3. $(b^ac^0)^{-1}$

$= \frac{1}{b^a \cdot 1}$

$= \frac{1}{b^a} = \frac{1}{3^{-2}}$

$= 3^2 = \boxed{9}$

#4-12, Simplify. Answers must not contain zero or negative exponents.

4. $-x^{-3}y^0z^4$

$= \boxed{\frac{-1z^4}{x^3}}$

5. $(a^{-3}b^2)^4(-2a^3b^7)^{-3}$

$= a^{-12}b^8 \cdot (-2)^{-3}a^{-9}b^{-21}$

$= (-2)^{-3}a^{-21}b^{-13}$

$= \frac{1}{(-2)^3a^{21}b^{13}}$

$= \boxed{\frac{1}{-8a^{21}b^{13}}}$

6. $(x^{-3}y^{-1})^{-1}(x^{-3}y^0)^2$

$= x^3y^1 \cdot x^{-6} \cdot 1^2$

$= 1x^{-3}y$

$= \boxed{\frac{y}{x^3}}$

7. $\frac{15q^{-4}}{10p^{-2}q^2}$

$= \frac{15p^2}{10q^4q^2}$

$= \boxed{\frac{3p^2}{2q^6}}$

8. $\frac{-4b^9b^{-7}}{8b^{-5}b^8}$

$= \frac{-4b^2}{8b^3}$

$= \boxed{\frac{-1}{2b}}$

9. $\left[\dfrac{(-7j^{23}k^{-212}m^{305}n)^{-3}}{(3j^{-38}k^{-110}m^{-108}n^{42})^{11}}\right]^{0}$

$= \boxed{1}$

10. $\left[\dfrac{2x^{-3}}{(2x)^3}\right]^{-2}$

$= \left[\dfrac{(2x)^3}{2x^{-3}}\right]^{2} = \left[\dfrac{8x^3}{2x^{-3}}\right]^{2}$

$= \left[\dfrac{8x^3x^3}{2}\right]^{2} = (4x^6)^2$

$= \boxed{16x^{12}}$

11. $\left(\dfrac{3z}{x^{-4}}\right)^{2}\left(\dfrac{3x^{-12}yz^{-3}}{2xy^7}\right)^{-3}$

$= (3x^4z)^2 \cdot \left(\dfrac{3}{2x^{13}y^6z^3}\right)^{-3}$

$= 9x^8z^2 \cdot \left(\dfrac{2x^{13}y^6z^3}{3}\right)^{3}$

$= \dfrac{9x^8z^2}{1} \cdot \dfrac{8x^{39}y^{18}z^9}{27}$

$= \dfrac{72x^{47}y^{18}z^{11}}{27}$

$= \boxed{\dfrac{8x^{47}y^{18}z^{11}}{3}}$

12. $\left[\dfrac{(a^{-5}b^2)^{-1}}{(-ab^4c^{-1})^2}\right]^{-4}$

$= \left[\dfrac{a^5b^{-2}}{1a^2b^8c^{-2}}\right]^{-4}$

$= \left[\dfrac{a^3c^2}{b^{10}}\right]^{-4}$

$= \left[\dfrac{b^{10}}{a^3c^2}\right]^{4}$

$= \boxed{\dfrac{b^{40}}{a^{12}c^8}}$