

Key.

Laws of Exponents Worksheet

Simplify the following.

1. $a^3 \times a^{-5} = a^{-2} = \boxed{\frac{1}{a^2}}$

2. $p^1 \times p^4 = \boxed{p^5}$

3. $a^2 \times a^{-3} \times a^4 = \boxed{a^3}$

4. $(2b^6)(b^{11}) = \boxed{2b^{17}}$

5. $(-9x^4)(-6x^3) = \boxed{54x^7}$

6. $(3a^3b)(4a^2b^7) = \boxed{12a^5b^8}$

7. $(3x^2y)(4xy^2)(-2x^3y) = \boxed{-24x^6y^4}$

8. $(3x^4y^3z^2)(5x^2y^{-4}) = 15x^6y^{-1}z^2$

9. $\frac{x^6}{x^2} = \boxed{x^4} = \boxed{\frac{15x^6z^2}{y}}$

10. $\frac{x^5y^8}{xy^2} = \boxed{x^4y^6}$

11. $\frac{a^8b^{12}c^{16}}{a^4b^6c^4} = \boxed{a^4b^6c^{12}}$

12. $\frac{9y^{-5}}{3y^1} = 3y^{-6} = \boxed{\frac{3}{y^6}}$

13. $40x^7y^3 \div 8y^3 = \frac{40x^7y^3}{8y^3} = \boxed{5x^7}$

14. $\frac{-18k^4j^4}{9j^4k^2} = \boxed{-2k^2}$

15. $(-24x^6y^{12}z^{10}) \div (-3x^2y^6z^2) = \frac{-24x^6y^{12}z^{10}}{-3x^2y^6z^2} = \boxed{8x^4y^6z^8}$

16. $(15x^4) \div (10x^3) = \frac{15x^4}{10x^3} = \boxed{\frac{3x}{2}}$

17. $(x^2)^3 = \boxed{x^6}$

18. $(a^3b^{-2})^4 = a^{12}b^{-8} = \boxed{\frac{a^{12}}{b^8}}$

19. $(3x^4)^2 = \boxed{9x^8}$

$$20. (x^4 y^3 z^3)^3 = \boxed{x^{12} y^9 z^9}$$

3EDMAS

$$21. (-3a^4 b^2)^3 (-2a^{-3} b)^2 = (-27a^{12} b^6)(4a^{-6} b^2) = \boxed{-108a^6 b^8}$$

$$22. (-k^4 y^{-8})^7 = -1 k^{28} y^{-56} = \boxed{\frac{-k^{28}}{y^{56}}}$$

$$23. (-2xy^7)^2 = \boxed{4x^2 y^{14}}$$

$$24. (-7^6)^{11} = \boxed{(-7)^{66}}$$

$$25. (y^2 \times y^4)^2 = (y^6)^2 = \boxed{y^{12}}$$

$$26. \left(\frac{x^9}{x^3}\right)^2 = (x^6)^2 = \boxed{x^{12}}$$

$$27. \frac{(-8x^5 y^3)(x^4 y)}{12x^6} = \frac{-8x^9 y^4}{12x^6} = \boxed{\frac{-2x^3 y^4}{3}}$$

$$28. \left(\frac{x^5 \times x^2}{x^4}\right)^2 = \left(\frac{x^7}{x^4}\right)^2 = (x^3)^2 = \boxed{x^6}$$