

Review of Exponent Rules & Their Use in Operations A (Simplify or perform the indicated operation.) MrB4math.com

1) $(-2r^5t^4)(4r^3t^5)^2$

$$(-2r^5t^4) \cdot 16r^6t^{10}$$

$$\boxed{-32r^{11}t^{14}}$$

2) $\frac{(q^3r^8)^4}{q^{17}r^{11}}$

$$\frac{1^4 r^{21}}{q^{17} r^{11}} = \boxed{\frac{r^{21}}{q^5}}$$

3) $(3m - 7)^2$

$$(3m - 7)(3m - 7)$$

$$9m^2 - 21m - 21m + 49$$

$$\boxed{9m^2 - 42m + 49}$$

4) $\left(\frac{3x^5y^3}{4x^3yz^9}\right)^2$

$$\left(\frac{3y^3}{4x^3z^9}\right)^2 = \boxed{\frac{9y^6}{16x^6z^{18}}}$$

5) $\frac{20y^8 + 8y^3 - 36y^2}{4y}$

$$\frac{520y^8}{4y} + \frac{28y^3}{4y} - \frac{936y^2}{4y}$$

$$\boxed{5y^7 + 2y^2 - 9y}$$

6) $(5y^6 - 9y - 8) - (-3y^6 - 4y + 7)$

$$+ 3y^6 + 4y - 7$$

$$\begin{array}{r} 5y^6 - 9y - 8 \\ 3y^6 + 4y - 7 \\ \hline 8y^6 - 5y - 15 \end{array}$$

Convert to standard notation:

7) 7.014×10^{-5}

$$\begin{array}{r} \textcolor{blue}{0.000}7014 \\ \textcolor{blue}{0.00007014} \end{array}$$

8) $(2x - 3)(x^2 - 4x + 10)$

$$\begin{array}{r} 2x^3 - 8x^2 + 20x \\ - 3x^2 + 12x - 30 \\ \hline 2x^3 - 11x^2 + 32x - 30 \end{array}$$

9) $(-7)^0 + 9(5)^0$

$$\begin{array}{r} 1 + 9 \\ 1 + 9 \\ \hline 10 \end{array}$$

10) $8k^{-5}$

$$\boxed{\frac{8}{K^5}}$$

11) $\left(\frac{x^{12}y^1}{x^{-8}y^{-3}z^5}\right)^2$

$$\left(\frac{x^{12}x^8y^1y^3}{z^5}\right)^2$$

$$\left(\frac{x^{20}y^4}{z^5}\right)^2 = \boxed{\frac{x^{40}y^8}{z^{10}}}$$

12) $(5x - 7)(2x + 3)$

$$10x^2 + 15x - 14x + 21$$

$$\boxed{10x^2 + x + 21}$$

13) $(2x^5y^6)^{-3}$

$$\frac{1}{(2^3x^5)^3} = \boxed{\frac{1}{8x^{15}}}$$

14) $(-4x^{10}y^{-2})(6x^7y^{-6})$

$$\begin{array}{r} -24x^{17}y^{-8} \\ \hline -24x^{17} \\ \hline y^8 \end{array}$$

15) $\frac{12r^7 + 15r^6 - r^2}{-3r^2}$

$$\begin{array}{r} \frac{412r^7}{-3r^2} + \frac{515r^4}{-3r^2} - \frac{r^2}{-3r^2} \\ \hline -4r^5 - 5r^4 + \frac{1}{3} \end{array}$$

$$\boxed{-4r^5 - 5r^4 + \frac{1}{3}}$$

$$16) (-3r^4t^2)(2\cancel{r^4t^7})^3$$

$$(-3r^4t^2)^2 \cdot 8r^{12}t^{21}$$

$$\boxed{-24r^{16}t^{23}}$$

$$17) \frac{(q^3r^6)^5}{q^9r^{11}}$$

$$\frac{q^{15}r^{30}}{q^9r^{11}} = \boxed{q^6r^{19}}$$

$$18) (n+9)^2$$

$$(n+9)(n+9)$$

$$n^2 + 9n + 9n + 81$$

$$\boxed{n^2 + 18n + 81}$$

$$19) (6x^5y^0)^{-2}$$

$$\frac{1}{(6x^5)^2} = \boxed{\frac{1}{36x^{10}}}$$

$$20) \frac{12y^8+3y^7+15y^4}{3y^4}$$

$$\frac{4}{3} \cancel{12y^8}^4 + \frac{3}{3} \cancel{y^7}^3 + \frac{5}{3} \cancel{15y^4}^5$$

$$\boxed{4y^4 + y^3 + 5}$$

$$21) (7n^3 - 9n + 8) + (5n^2 + 4n - 8)$$

$$\begin{array}{r} 7n^3 - 9n + 8 \\ 5n^2 + 4n - 8 \\ \hline 7n^3 + 5n^2 - 5n + 0 \end{array}$$

$$\boxed{7n^3 + 5n^2 - 5n}$$

Convert to scientific notation:

$$22) 370,200$$

$$\boxed{3.702 \times 10^5}$$

$$23) (x+4)(5x^2 - 8x + 11)$$

$$\begin{array}{r} 5x^3 - 8x^2 + 11x \\ + 20x^2 - 32x + 44 \\ \hline 5x^3 + 12x^2 - 21x + 44 \end{array}$$

$$24) -3a^5b(8a^0b^7)$$

$$\boxed{-24a^5b^8}$$

$$25) (5k^3m)^{-2}$$

$$\frac{1}{(5k^3m)^2} = \boxed{\frac{1}{25k^6m^2}}$$

$$5^2 \nearrow$$

$$26) \left(\frac{x^{-2}y^{-5}}{x^{-3}y^{-1}} \right)^2$$

$$\left(\frac{x^3y^1}{x^2y^4} \right)^2 = \boxed{\frac{x^2}{y^8}}$$

$$27) (3r+5)(2r-7)$$

$$6r^2 - 21r + 10r - 35$$

$$\boxed{6r^2 - 11r - 35}$$

$$28) (6x^5y^2)^{-2}$$

$$\frac{1}{(6x^5y^2)^2} = \boxed{\frac{1}{36x^{10}y^4}}$$

$$6^2 \nearrow$$

$$29) (3x^{-4}y^2)(-9x^{-5}y^6)$$

$$-27x^{-9}y^8 = \boxed{-\frac{27y^8}{x^9}}$$

$$30) \frac{12x^7+20x^6-4x^2}{4x^2}$$

$$\frac{3}{4} \cancel{12x^7}^5 + \frac{5}{4} \cancel{20x^6}^4 - \frac{4}{4} \cancel{x^2}^2$$

$$\boxed{3x^5 + 5x^4 - 1}$$