Exponents (Negative & Zero)- Simplify ***B*** (Write with positive exponents. Variables represent nonzero real numbers.) MrB4math.com

1a) $\frac{1}{5^{-2}} = 5^2 = 25$

1b) $5^{-2} = \frac{1}{5^2} = \frac{1}{25}$

1c) $k^{-2} = \frac{1}{k^2}$

2a) $7m^0 + n^0$

$7 \cdot 1 + 1$

$7 + 1$

8

2b) -3^0

-1

3) $\frac{10u^5v^6w^0}{2u^{-7}v^{-10}} = \frac{5v^{10}v^6}{u^2} = \frac{5v^{16}}{u^2}$

4) $(3x^{-10}y^2)(6x^{-7}y^6)$

On many of these problems, your work may differ from the key, but your answers must always match.

$18x^{-10-7}y^{2+6}$

$18x^{-17}y^8 = \frac{18y^8}{x^{17}}$

5) $\left(\frac{p^1q^{-3}}{p^{-5}q^4}\right)^{-4} = \left(\frac{p^1p^5}{q^3q^4}\right)^{-4} = \left(\frac{p^6}{q^7}\right)^{-4} = \left(\frac{q^7}{p^6}\right)^4 = \frac{q^{28}}{p^{24}}$

6) $\left(\frac{3m^0n^{-3}}{5m^4n^1}\right)^2 = \left(\frac{3}{5m^4n^3n^1}\right)^2 = \left(\frac{3}{5m^4n^4}\right)^2 = \frac{9}{25m^8n^8}$

7) $\left(\frac{c^1d^{-5}}{c^{-2}d^9}\right)^{-2} = \left(\frac{c^1c^2}{d^5d^9}\right)^{-2} = \left(\frac{c^3}{d^{14}}\right)^{-2} = \left(\frac{d^{14}}{c^3}\right)^2 = \frac{d^{28}}{c^6}$

8a) $y^8y^{-5}y^{-10}$

$y^{8-5-10} = y^{-7} = \frac{1}{y^7}$

8b) $7^{-9} \cdot 7^{11}$

$7^{-9+11} = 7^2 = 49$

9) $(4x^0y^3)^{-2} = \frac{1}{(4y^3)^2} = \frac{1}{16y^6}$

10) $3^{-2} + 2^{-1}$

$\frac{1}{3^2} + \frac{1}{2}$

$\frac{1 \cdot 2}{9 \cdot 2} + \frac{1 \cdot 9}{2 \cdot 9}$

$\frac{2}{18} + \frac{9}{18} = \frac{11}{18}$

11a) $-3a^4b^{-7} = \frac{-3a}{b^7}$

11b) $\frac{5}{r^{-2}} = 5r^2$