

Name: _____

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Exponent Rules

Use laws of exponents and simplify. Write your answers in positive exponents.

1) $\left(\frac{p^{-7}q^2}{p^2q^{-8}}\right)^2$

2) $(a^{-2}b)^{-3}(ab^{-7})$

3) $\left(\frac{-6u^{-5}v^2}{-2u^4n^3}\right)^2$

4) $(-8m^{-3}n^2)(2m^5n)^3$

5) $\frac{(5r^{-2})(2r^{-6})}{7r^5}$

6) $\left(\frac{-3x^2y^3}{x^{-4}y^2}\right)(-2x^{-8}y^{-2})$

7) $\left(\frac{-9mn^{-3}}{3m^4n^{-5}}\right)^2$

8) $(s^4t^2)^3(s^{-5}t^3)^2$

9) $(-8r^3s^{-5})\left(\frac{r^7s^{-5}}{2r^{-4}s^7}\right)$

10) $\frac{6l^7m^{-3}}{(l^5m^{-2})(2lm^3)}$

11) $\left(\frac{-4b^{-2}c^3}{-8b^4c^{-7}}\right)^{-3}$

12) $(-5a^2b^4)(2bc^{-3})^2(-3c^4)^3$

13) $\frac{(4l^3m^{-2})(2m^{-3}n^5)}{8n^7}$

14) $\left(\frac{9p^2q^{-3}}{27pq^3r^{-2}}\right)^2$

15) $(-8x^2y)(y^3z^{-2})^{-2}(2x^{-3}y^2)^3$

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Answers

1) $\left(\frac{p^{-7}q^2}{p^2q^{-8}}\right)^2$ $= \frac{q^{20}}{p^{18}}$	2) $(a^{-2}b)^{-3}(ab^{-7})$ $= \frac{a^7}{b^{10}}$	3) $\left(\frac{-6u^{-5}v^2}{-2u^4n^3}\right)^2$ $= \frac{9}{u^{18}v^2}$
4) $(-8m^{-3}n^2)(2m^5n)^3$ $= -64m^{12}n^5$	5) $\frac{(5r^{-2})(2r^{-6})}{7r^5}$ $= \frac{10}{7r^{13}}$	6) $\left(\frac{-3x^2y^3}{x^{-4}y^2}\right)(-2x^{-8}y^{-2})$ $= \frac{6}{x^2y}$
7) $\left(\frac{-9mn^{-3}}{3m^4n^{-5}}\right)^2$ $= \frac{9n^4}{m^6}$	8) $(s^4t^2)^3(s^{-5}t^3)^2$ $= s^2t^{12}$	9) $(-8r^3s^{-5})\left(\frac{r^7s^{-5}}{2r^{-4}s^7}\right)$ $= \frac{-4r^{14}}{s^{17}}$
10) $\frac{6l^7m^{-3}}{(l^5m^{-2})(2lm^3)}$ $= \frac{6l}{m^4}$	11) $\left(\frac{-4b^{-2}c^3}{-8b^4c^{-7}}\right)^{-3}$ $= \frac{8b^{18}}{c^{30}}$	12) $(-5a^2b^4)(2bc^{-3})^2(-3c^4)^3$ $= 540a^2b^6c^6$
13) $\frac{(4l^3m^{-2})(2m^{-3}n^5)}{8n^7}$ $= \frac{l^3}{m^5n^2}$	14) $\left(\frac{9p^2q^{-3}}{27pq^3r^{-2}}\right)^2$ $= \frac{p^2r^4}{9q^{12}}$	15) $(-8x^2y)(y^3z^{-2})^{-2}(2x^{-3}y^2)^3$ $= \frac{-64yz^4}{x^7}$