

Name: _____

Score: _____

Exponent Rules

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

1) $\left(\frac{x^7y^3}{x^2y}\right)^4$

2) $(a^3b)^4(ab^6)^2$

3) $\left(\frac{8m^5n^7}{2mn^5}\right)^3$

4) $(5p^3q^2)(2p^4q)^2$

5) $\frac{(8k^{-5})(2k^3)}{4k^{-6}}$

6) $(b^{-3}c^{-7})^{-2}(b^3c^{-2})^{-3}$

7) $\left(\frac{6lm^2}{3l^3m^6}\right)^2$

8) $\left(\frac{2r^{-5}s^6}{r^3s^4}\right)(3r^9s^{-4})$

9) $(u^{-3}v^5)\left(\frac{9u^{-5}v^2}{3u^6v^{-8}}\right)$

10) $\frac{8v^5w^{-6}}{(2v^{-3}w^2)(v^6w)}$

11) $\left(\frac{3s^{-2}t^7}{6s^3t^{-5}}\right)^{-4}$

12) $(3l^{-2}m^3)(2m^{-5})^2(lm^4)^{-3}$

13) $(4u^2v)^{-3}(u^{-5}v^6)^2(u^{-8}w^{-9})$

14) $\left(\frac{6x^{-3}y^5}{2xy^2z^6}\right)^5$

15) $\frac{(2a^{-3}b)(6b^5c^{-7})}{4c^{-9}}$

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Answers

$$1) \left(\frac{x^7y^3}{x^2y}\right)^4$$

$$= x^{20}y^8$$

$$2) (a^3b)^4(ab^6)^2$$

$$= a^{14}b^{16}$$

$$3) \left(\frac{8m^5n^7}{2mn^5}\right)^3$$

$$= 64m^{12}n^6$$

$$4) (5p^3q^2)(2p^4q)^2$$

$$= 20p^{11}q^4$$

$$5) \frac{(8k^{-5})(2k^3)}{4k^{-6}}$$

$$= 4k^4$$

$$6) (b^{-3}c^{-7})^{-2}(b^3c^{-2})^{-3}$$

$$= \frac{c^{20}}{b^3}$$

$$7) \left(\frac{6lm^2}{3l^3m^6}\right)^2$$

$$= \frac{4}{l^4m^8}$$

$$8) \left(\frac{2r^{-5}s^6}{r^3s^4}\right)(3r^9s^{-4})$$

$$= \frac{6r}{s^2}$$

$$9) (u^{-3}v^5)\left(\frac{9u^{-5}v^2}{3u^6v^{-8}}\right)$$

$$= \frac{3v^{15}}{u^{14}}$$

$$10) \frac{8v^5w^{-6}}{(2v^{-3}w^2)(v^6w)}$$

$$= \frac{4v^2}{w^9}$$

$$11) \left(\frac{3s^{-2}t^7}{6s^3t^{-5}}\right)^{-4}$$

$$= \frac{16s^{20}}{t^{48}}$$

$$12) (3l^{-2}m^3)(2m^{-5})^2(lm^4)^{-3}$$

$$= \frac{12}{l^5m^{19}}$$

$$13) (4u^2v)^{-3}(u^{-5}v^6)^2(u^{-8}w^{-9})$$

$$= \frac{v^9}{64u^{24}w^9}$$

$$14) \left(\frac{6x^{-3}y^5}{2xy^2z^6}\right)^5$$

$$= \frac{243y^{15}}{x^{20}z^{30}}$$

$$15) \frac{(2a^{-3}b)(6b^5c^{-7})}{4c^{-9}}$$

$$= \frac{3b^6c^2}{a^3}$$