

Name: _____

Score: _____

Exponent Rules

Algebra: D1

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

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

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

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

4) $\frac{(3p^2)^3(2p^2)}{p^{-1}p^{-3}}(3p^2)^{-4}$

$(2u^4v^{-2})^3(6uv^{-5})^{-4}$

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7) $(p^{-3}q^2)^{-4} \left(\frac{4p^2q}{2p^{-8}}\right)^{-3}$

$(y^5z^{-2})^3(z^{-2})^{-5}(x^3y^{-8})^{-2}$

10) $\left(\frac{(4s^3t^{-2})(2t^{-3}u)}{8u^7}\right)^{-2}$

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

13) $\left(\frac{6x^7y^{-3}}{(x^5y^{-2})(2xy^3)}\right)^3$

14) $\frac{(4a^2b^{-3})^2(b^{-7}c^8)^{-3}}{(2b^3c^{-5})^3(a^{-5}b^{-6})^{-4}}$

15) $\left(\frac{(2p^{-3}q^6)^3(q^{-5}r^6)^{-2}}{(p^2q^{-3})^{-4}(-3p^{-3}q^5r^{-2})^2}\right)^2$

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Answer key

Score: _____

Exponent Rules

Algebra: D1

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

$$= \frac{8n^8}{75m^6}$$

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

$$= \frac{a^{12}b^{10}}{c^{12}}$$

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

$$= \frac{y^{18}}{200x^{21}}$$

4) $\frac{(3p^2)^3(2p^2)}{p^{-1}p^{-3}}(3p^2)^{-5}$

$$= 2p^6$$

7) $(p^{-3}q^2)^{-4} \left(\frac{4p^2q}{2p^{-8}}\right)^{-3}$

$$= \frac{4p^{32}}{q^{28}}$$

10) $\left(\frac{(4s^3t^{-2})(2t^{-3}u)}{8u^7}\right)^{-2}$

$$= \frac{s^6}{t^{10}u^4}$$

13) $\left(\frac{6x^7y^{-3}}{(x^5y^{-2})(2xy^3)}\right)^3$

$$= \frac{27x^3}{y^{12}}$$

14) $\frac{(4a^2b^{-3})^2(b^{-7}c^8)^{-3}}{(2b^3c^{-5})^3(a^{-5}b^{-6})^{-4}}$

$$= \frac{2}{a^{16}b^{18}c^9}$$

15) $\left(\frac{(2p^{-3}q^6)^3(q^{-5}r^6)^{-2}}{(p^2q^{-3})^{-4}(-3p^{-3}q^5r^{-2})^2}\right)^2$

$$= \frac{64p^{10}q^{12}}{81r^{16}}$$

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