

Name: \_\_\_\_\_

Score: \_\_\_\_\_

|                       |
|-----------------------|
| <b>Exponent Rules</b> |
|-----------------------|

Algebra: D2

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

1)  $\left(\frac{2u}{3v^4}\right)^3 \left(\frac{-4v^{-3}}{8u^5}\right)^{-2}$

2)  $\left(\frac{x^3y^2}{y^{-4}z^5}\right)^3 (x^{-5}y^6)^{-2}$

3)  $(2a^{-3}b^5)^4(8a^{-5}b^{-6})^{-2}$

4)  $\frac{(4r^2s^{-3})^2(3r^{-3}s^4)^{-1}}{(r^{-5}s^7)^{-4}(9r^{-1}s^2)^{-3}}$

$\frac{(6k^{-5})^3}{k^{-4}}(3k^{-1})^2$

7)  $\frac{4^2x^{-4}(x^{-5})^{-1}}{8x^2(x^3)^{-2}}$

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$\left(\frac{p^4q^{-6}}{r^{-1}}\right)^{-2} \left(\frac{q^{-1}r}{6}\right)^{-3}$

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10)  $\left(\frac{(3bc^5)(3a^2b^{-1})}{9a^{-2}}\right)^{-3}$

$\left(\frac{3t^5}{t^{-4}}\right)^{-2} \left(\frac{2s^4t^{-1}}{4s^{-9}t^{-7}}\right)^2$

13)  $\left(\frac{4t^{-2}u^5}{(3t^{-5}u^6)(2tu^{-3})}\right)^{-3}$

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

15)  $\left(\frac{(3x^{-5}y^3)^{-2}(y^{-5}z^2)^{-3}}{(3xy^2)^{-4}(x^2y^{-3}z^4)^{-2}}\right)^2$

Name: \_\_\_\_\_

Answer key

Score: \_\_\_\_\_

## Exponent Rules

Algebra: D2

1)  $\left(\frac{2u}{3v^4}\right)^3 \left(\frac{-4v^{-3}}{8u^5}\right)^{-2}$

$$= \frac{32u^{13}}{27v^6}$$

2)  $\left(\frac{x^3y^2}{y^{-4}z^5}\right)^3 (x^{-5}y^6)^{-2}$

$$= \frac{x^{19}y^6}{z^{15}}$$

3)  $(2a^{-3}b^5)^4(8a^{-5}b^{-6})^{-2}$

$$= \frac{b^{32}}{4a^2}$$

4)  $\frac{(4r^2s^{-3})^2(3r^{-3}s^{-3})^3}{(r^{-5}s^7)^{-4}(9r^{-1}s^{-2})^2}$

$$= \frac{48s^{25}}{r^{24}}$$

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7)  $\frac{4^2x^{-4}(x^{-5})^{-1}}{8x^2(x^3)^{-2}}$

$$= 2x^5$$

10)  $\left(\frac{(3bc^5)(3a^2b^{-1})}{9a^{-2}}\right)^{-3}$

$$= a^8c^{12}$$

13)  $\left(\frac{4t^{-2}u^5}{(3t^{-5}u^6)(2tu^{-3})}\right)^{-3}$

$$= \frac{27}{8t^6u^6}$$

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

$$= \frac{25}{16l^{10}m^6n^{19}}$$

15)  $\left(\frac{(3x^{-5}y^3)^{-2}(y^{-5}z^2)^{-3}}{(3xy^2)^{-4}(x^2y^{-3}z^4)^{-2}}\right)^2$

$$= 81x^{36}y^{22}z^4$$