

~~Assignment~~ Exponents WS 3

9/19/19

Date _____

Period _____

Simplify. Your answer should contain only positive exponents.

$$1) \left(\frac{2x^{-1}y^2z^{-3} \cdot 2x^0y^{-3}z^3}{2x^2y^4z^3} \right)^{-3}$$

$$= \left(\frac{4x^{-1}y^{-1}z^0}{2x^2y^4z^3} \right)^{-3}$$

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

$$= 2^{-3}x^9y^{15}z^9$$

$$= \boxed{\frac{x^9y^{15}z^9}{8}}$$

$$3) \left(\frac{yx^2z^{-3} \cdot 2yzx^4}{2xy^{-4}z^4} \right)^0 = 1$$

$$(\text{anything})^0 = 1$$

$$2) \frac{n^0 \cdot 2m^3}{(2nm^4p^{-4})^{-2}} = \frac{2m^3n^0}{2^{-2}n^{-2}m^{-8}p^{-8}} = 2^3m^{11}n^2p^8$$

$$= \boxed{8m^{11}n^2p^8}$$

$$4) \frac{(mp^0q^3)^3 \cdot qm^4}{2m^2p^0q^{-3}} = \frac{m^3p^0q^9 \cdot qm^4}{2m^2p^0q^{-3}}$$

$$= \frac{m^7p^0q^{10}}{2m^2p^0q^{-3}}$$

$$= \boxed{\frac{m^5q^{13}}{2}}$$

$$5) \frac{m^3 p^2 q^{-1}}{m p^4 q^3 \cdot (2 p^0 q^{-2})^{-4}}$$

$$= \frac{m^3 p^2 q^{-1}}{m p^4 q^3 \cdot 2^{-4} p^0 q^8}$$

$$= \frac{m^3 p^2 q^{-1}}{2^4 m p^4 q^{11}}$$

$$= 2^4 m^2 p^{-2} q^{-12}$$

$$= \boxed{\frac{16 m^2}{p^2 q^{12}}}$$

$$7) \frac{(2 q^4)^3}{p^4 q^3 \cdot (m^4 p^3 q^0)^{-4}}$$

$$= \frac{8 q^{12}}{p^4 q^3 \cdot m^{-16} p^{-12} q^0}$$

$$= \frac{8 q^{12}}{m^{-16} p^{-8} q^3}$$

$$= \frac{8 q^9}{m^{-16} p^{-8}}$$

$$= \boxed{8 m^{16} p^8 q^9}$$

$$6) \frac{2 x^4 y^{-2} z^2 \cdot (2 y)^{-3}}{2 x^2 y^{-2}} = \frac{2 x^4 y^2 z^2 (2^{-3} y^{-3})}{2 x^2 y^{-2}}$$

$$= \frac{2 x^4 y^{-1} z^2}{2^3 \cdot 2 x^2 y^{-2}}$$

$$= \frac{2 x^2 y^1 z^2}{2^3}$$

$$= \boxed{\frac{x^2 y z^2}{8}}$$

$$8) \frac{(2 x^4 y^{-2})^0 \cdot (2 x^3)^{-3}}{2 y^{-4} z^3} = \frac{1 \cdot 2^{-3} x^{-9}}{2 y^{-4} z^3}$$

no variables
are the same,
so just started
moving - exponents

$$= \frac{y^4}{2^3 \cdot 2 \cdot x^9 z^3}$$

$$= \boxed{\frac{y^4}{16 x^9 z^3}}$$

Exponents

WS 4

9/23/19

Date _____ Period _____

Simplify. Your answer should contain only positive exponents.

$$1) \frac{2pq^0 \cdot -2rq^3}{(-p^{-1}q^2r^3)^2} = \frac{-2pq^0 \cdot -2rq^3}{p^{-2}q^4r^6}$$

$$= \frac{4prq^3}{p^{-2}q^4r^6}$$

$$= 4p^3r^5q^{-1}$$

$$= \boxed{\frac{4p^3}{qr^5}}$$

$$3) \frac{m^3}{(-2n^2p^4)^3 \cdot (-m^{-3}n^{-2}p^{-3})^3}$$

$$\frac{-m^3}{(-2)^3n^6p^{12} \cdot (-1)^3m^{-9}n^{-6}p^{-9}}$$

$$\frac{-m^3}{(-8)(-1)m^{-9}n^0p^3} = \boxed{\frac{-m^{12}}{8p^3}}$$

$$5) \frac{2j^{-4}k^3}{(-2j^4k^{-4} \cdot 2hj^3)^3} = \frac{2j^{-4}k^3}{(-2)^3j^{12}k^{-12}2^3h^3j^9}$$

$$= \frac{2j^{-4}k^3}{(-8)(8)j^{21}k^{-12}h^3}$$

$$= \frac{2j^{-25}k^{15}}{-64h^3}$$

$$= \boxed{\frac{k^{15}}{-32j^{25}h^3}}$$

$$2) \frac{(p^0r^2)^2}{-p^4q^3r^{-1} \cdot -2p^{-1}q^0r^{-3}} = \frac{p^0r^4}{2p^3q^3r^{-4}}$$

$$-1 \cdot -2 = 2$$

$$= \frac{p^{-3}r^8}{2q^3} = \boxed{\frac{r^8}{2q^3p^3}}$$

$$4) \frac{ca^3b^0 \cdot a^3b^2c^{-1}}{(2a^{-3}b^4)^4} = \frac{-a^6b^2c^0}{2^4a^{-12}b^{16}}$$

$$= \frac{-a^{18}b^{-14}}{16}$$

$$= \boxed{\frac{-a^{18}}{16b^{14}}}$$

$$6) \frac{\cancel{2}mq^{-1} \cdot \cancel{2}qp^{-1}}{m^{-4} \cdot m^0p^0q^2} = \left(\frac{2mq^0p^{-1}}{m^{-4}p^0q^2} \right)^4$$

$$= (2m^5q^{-2}p^{-1})^4$$

$$= \left(\frac{2m^5}{pq^2} \right)^4$$

$$= \boxed{\frac{16m^{20}}{p^4q^8}}$$

Simplify. Your answer should contain only positive exponents.

$$1) \frac{2j^4k^0 \cdot (-2jkh^{-1})^{-1}}{jk^0}$$

$$\frac{2j^4k^0(-2)^{-1}j^{-1}k^{-1}h^1}{jk^0}$$

$$\frac{2(-2)^{-1}j^{4-1}k^{-1}h^1}{jk^0}$$

$$\frac{2(-2)^{-1}j^3k^{-1}h^1}{jk^0}$$

$$\frac{2j^2h}{(-2)^1k} = \boxed{\frac{j^2h}{-k}} \text{ the } (-) \text{ can go anywhere}$$

$$2) \left(\frac{yx^{-3}z^3 \cdot -2xy^{-2}z^{-4}}{yz^{-4}} \right)^2$$

$$\left(\frac{(-1)(-2)x^{-2}y^{-1}z^{-1}}{yz^{-4}} \right)^2$$

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

$$4x^{-4}y^{-4}z^6$$

$$\boxed{\frac{4z^6}{x^4y^4}}$$

$$3) -\frac{2a^3c^2 \cdot b^{-4}c^2}{(-2a^3b^0c^{-3})^4} = \frac{-2a^3c^2 \cdot b^{-4}c^2}{(-2)^4a^{12}b^0c^{-12}}$$

$$= \frac{-2a^3b^{-4}c^4}{16a^{12}b^0c^{-12}}$$

$$= \frac{-1a^{-9}b^{-4}c^{16}}{8}$$

$$= \boxed{\frac{-c^{16}}{8a^9b^4}}$$

$$4) -\frac{x^3y^2z^3}{(x^2y^2z^2 \cdot -yx^{-3})^{-3}} = \frac{-x^3y^2z^3}{(x^{-1}y^3z^2)^{-3}}$$

$$= \frac{-x^3y^2z^3}{x^3(-y^3)z^{-6}}$$

(the negatives cancel)

$$= x^0y^{11}z^9$$

$$= \boxed{y^{11}z^9}$$

Answers to Exponents Exit Ticket

Given 9/26

$$1) \frac{p^7 q^3}{2r}$$

$$2) \frac{1}{16z^{47} x^8 y^{36}}$$

$$3) 2x^5 y^6 z^2$$

$$4) \frac{64z^9}{y^{12} x^6}$$

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

$$= \left(\frac{2q p^{-3} r^4}{p^4 q^4 r^3} \right)^{-1} = (2q^{-3} p^{-7} r^1)^{-1}$$

$$= 2^{-1} q^3 p^7 r^{-1} = \frac{q^3 p^7}{2r}$$

$$\textcircled{2} \frac{(2x^{-2} z^3 \cdot (x^2 y z^4)^2)^{-4}}{y^4 z^3}$$

$$\frac{((2x^{-2} z^3)(x^4 y^2 z^8)^2)^{-4}}{y^4 z^3}$$

$$\frac{(2x^2 y^8 z^{11})^{-4}}{y^4 z^3} = \frac{2^{-4} x^{-8} y^{-32} z^{-44}}{y^4 z^3}$$

$$2^{-4} x^{-8} y^{-36} z^{-47} = \frac{1}{16x^8 y^{36} z^{47}}$$

$$\textcircled{3} \frac{x^2 y^4 z^4}{(2x^2 y^4 z^{-1})^{-1} \cdot z x^{-1} y^2}$$

$$\frac{x^2 y^4 z^4}{2^{-1} x^{-2} y^{-4} z^1 \cdot z x^{-1} y^2}$$

$$\frac{x^2 y^4 z^4}{2^{-1} x^{-3} y^{-2} z^2} = 2x^5 y^6 z^2$$

$$\textcircled{4} \left(\frac{2x y^{-3} z^3 \cdot 2x^{-3} y^{-1}}{(y^0)^4} \right)^3$$

$$\left(\frac{4x^{-2} y^{-4} z^3}{y^0} \right)^3 = \frac{4^3 x^{-6} y^{-12} z^9}{y^0 = 1}$$

$$= \frac{64z^9}{x^6 y^{12}}$$

Partner Probs/Quiz Review 9/27

Simplify. Your answer should contain only positive exponents.

$$\begin{aligned}
 1) \quad & \left(\frac{x^{-1}y^{-2}z^0}{x^0y^{-4}z^3 \cdot (yx^0z^{-4})^{-2}} \right)^2 \\
 & \frac{y^8}{x^2z^{22}} = \left(\frac{x^{-1}y^{-2}z^0}{x^0y^{-4}z^3 \cdot y^{-2}x^0z^8} \right)^2 \\
 & = \left(\frac{x^{-1}y^{-2}z^0}{x^0y^{-6}z^{11}} \right)^2 \\
 & = (x^{-1}y^4z^{-11})^2 \\
 & = x^{-2}y^4z^{-22} \\
 & = \boxed{\frac{y^4}{x^2z^{22}}}
 \end{aligned}$$

$$\begin{aligned}
 2) \quad & \frac{(2zx^0y^3)^{-3} \cdot 2x^3z^3 \cdot 2yzx^{-3}}{(y^{-2}z^0)^2} = \frac{2^3x^{-9}y^{-9} \cdot 2x^3z^3 \cdot 2x^0y^1z^1}{y^{-4}z^0} \\
 & \frac{z}{2y^4} \\
 & = \frac{2^{-1}x^0y^{-8}z}{y^{-4}z^0} \\
 & = 2^{-1}x^0y^{-4}z \\
 & = \boxed{\frac{z}{2y^4}}
 \end{aligned}$$

$$\begin{aligned}
 3) \quad & \frac{p^3q^{-4}r^3 \cdot (p^{-3}r^{-3})^{-3}}{2p^{-3}q^0r^0} \\
 & \frac{p^{15}r^{12}}{2q^4} = \frac{p^3q^{-4}r^3(p^9r^9)}{2p^{-3}q^0r^0} \\
 & = \frac{p^{12}q^{-4}r^{12}}{2p^{-3}q^0r^0} \\
 & = \frac{p^{15}q^{-4}r^{12}}{2} \\
 & = \boxed{\frac{p^{15}r^{12}}{2q^4}}
 \end{aligned}$$

$$\begin{aligned}
 4) \quad & \frac{(2m^3n^{-2}p^{-3})^3}{2m^{-3}n^4p^4 \cdot m^2} = \frac{2^3m^9n^{-6}p^{-9}}{2m^{-1}n^4p^4} \\
 & \frac{4m^{10}}{n^{10}p^{13}} \\
 & = 2^2m^{10}n^{-10}p^{-13} \\
 & = \boxed{\frac{4m^{10}}{n^{10}p^{13}}}
 \end{aligned}$$