1 as an exponent:

For every number a,

$a^1 = a$

Any number raised to the first power = itself

If there is no exponent on a number it is assumed to be 1

$a^0 = 1$

any number, a, to the zero power equals 1

EXCEPT:
a can't be zero.

$a^{-n} = \frac{1}{a^n}$ any number, a, raised to a negative integer power is the reciprocal of that number to the positive power.

EXCEPT a can't be zero.

Simplify each. Make sure exponents aren't negative or zero.

1. $\frac{-3c^5d^{-7}}{e^{-2}g^0} = \frac{-3c^5e^2}{d^7} = \frac{-3c^5e^2}{d^7}$

2. $\frac{6^{-2}j^{-3}}{2^{-3}k^{-1}} = \frac{2^3 k^1}{6^2 j^3} = \frac{8k^1}{36j^3} = \frac{2k^1}{9j^3}$

3. $\left(\frac{4^{-2}a^4b^{-7}}{8c^{-2}}\right)^{-1} = \left(\frac{a^4c^2}{128b^7}\right)^{-1}$

$\frac{a^4c^2}{4^2 \cdot 8b^7}$

$= \frac{128b^7}{a^4c^2}$

Evaluate each expression for a= -4, b=6, and c= -2. Give fractional answers in reduced form (no decimals).

4. $3a^{-2}b =$ $\frac{3b}{a^2} = \frac{3(6)}{(-4)^2} = \frac{18}{+16}$

$= \frac{9}{8}$

Evaluate each expression for a= -4, b=6, and c= -2. Give fractional answers in reduced form (no decimals).

5. $\frac{c^{-3}}{2a^{-1}} =$

$$\frac{a^1}{2c^3} = \frac{(-4)}{2(-2)^3} = \frac{-4}{-16} = \frac{1}{4}$$

Evaluate each expression for a= -4, b=6, and c= -2. Give fractional answers in reduced form (no decimals).

6. $-b^{-2}c^2 =$

$$\frac{c^2}{-b^2} = \frac{(-2)^2}{-(6)^2} = \frac{4}{-36} = \frac{-1}{9}$$

Fill in the next number in the right-hand column

As you move down a column subtract one from the exponent.

2^4	16
2^3	8
2^2	4
2^1	2
2^0	1

As you move down a column divide by 2.

$a^0 = 1$

any number, a, to the zero power equals 1

EXCEPT:
a can't be zero.

Simplify each. Write your answer so that no exponents are zero or negative.

Take a small white board.

$Q^{-5} = \frac{1}{Q^5}$

$5a^{-2}$ $\frac{5}{a^2}$

$\frac{4}{e^{-3}}$ $4e^{3}$ $7Q^{-5}R^{0}$ $\frac{7}{Q^{5}}$

$\frac{-7x^{-2}}{y^{-1}}$ $\frac{-7y^{1}}{x^{2}}$ $6b^{-2}+c^{0}$ $\frac{6}{b^{2}}+1$

$3^{-2}m^{-4}n$ $\frac{n}{9m^4}$

$\frac{c^{-3}d^{-2}}{-6b^4}$

$-6b^4c^3d^2$

$\frac{10p^{-5}q^6}{m^0n^{-2}}$ $\frac{10n^2q^6}{p^5}$

$\frac{5^{-2}a^{-1}b^{-4}}{4c^6d^{-7}}$

$\frac{d^7}{100c^6a^1b^4}$

$(m^2n^7)^{-1}$ $\frac{1}{m^2n^7}$

$\left(\frac{a^{-3}}{b^8}\right)^{-1}$ $\left(\frac{1}{\frac{a^3}{b^8}}\right)^{-1}$ $\frac{a^3b^8}{1}$

$\left(\frac{m^{-6}n^4}{t^{-2}}\right)^{-1}$ $\left(\frac{t^2n^4}{m^6}\right)^{-1}$ $= \frac{m^6}{t^2n^4}$

Evaluate each for $P = -3$ $Q = 6$. Leave non-integer answers as a fraction in reduced form.

6. $-5PQ^{-2}$ $-\frac{5P}{Q^2} = \frac{5(-3)}{(6)^2} = \frac{15}{36} = \frac{5}{12}$

7. $\frac{P^{-3}}{Q^{-1}}$ $\frac{Q^1}{P^3} = \frac{6}{(-3)^3} = \frac{6}{-27} = \frac{2}{-9}$

8. $2P^{-2}Q^2$ $P=-3; Q=6$ $\frac{2Q^2}{P^2} = \frac{2(6)^2}{(-3)^2} = \frac{72}{9} = 8$

9. $4^{-2}P^{-1}Q^2$ $\frac{Q^2}{4^2P^1} = \frac{Q^2}{16 \cdot P} = \frac{36 \div 12}{-48 \div 12} = \frac{3}{-4}$

No Bookwork for Friday!

IXL #6 - V.1 & V.3 due tomorrow by 4pm!