

# U1L4 Zero and Negative Exponent notes

November-24-14 10:38 AM

## A See the pattern

$$3^3 = 3 \times 3 \times 3 = 27 \quad \left. \begin{array}{l} \div 3 \\ \div 3 \\ \div 3 \end{array} \right\}$$

$$3^2 = 3 \times 3 = 9$$

$$3^1 = 3 = 3$$

$$3^0 = 1$$

$$3^{-1} = \frac{1}{3} = \frac{1}{3}$$

$$3^{-2} = \frac{1}{3^2} = \frac{1}{9}$$

$$10^3 = 10 \times 10 \times 10 = 1000 \quad \left. \begin{array}{l} \div 10 \\ \div 10 \\ \div 10 \end{array} \right\}$$

$$10^2 = 10 \times 10 = 100$$

$$10^1 = 10 = 10$$

$$10^0 = 1$$

$$10^{-1} = \frac{1}{10} = \frac{1}{10}$$

$$10^{-2} = \frac{1}{10^2} = \frac{1}{100}$$

2 important concepts #1)  $3^0, 10^0, (-99)^0, 5^0 = 1$  if exponent is zero, then your answer is 1.

#2) Negative Exponents: FLIP base, change neg exponent to a pos exponent

i)  $3^{-2} = \frac{1}{3^2} = \frac{1}{9} \checkmark$

ii)  $4^{-3} = \frac{1}{4^3} = \frac{1}{64}$

$$3^{+2} = 3 \times 3 = 9$$

$$4^{+3} = 4 \times 4 \times 4 = 64$$

iii)  $\left(\frac{5}{8}\right)^{-2} = \left(\frac{8}{5}\right)^{+2} = \left(\frac{8}{5}\right)\left(\frac{8}{5}\right) = \frac{8^2}{5^2} = \frac{64}{25}$

Try: i)  $3^0 = 1$   $n=0 \checkmark$

ii)  $2^{-3} = \frac{1}{2^3} = \frac{1}{8} \checkmark$

iii)  $-3^2 = -9 = -(3 \times 3)$

iv)  $(-3)^2 = +9 = (-3)(-3)$

## C Simplified Exponential Form

$$\frac{1}{4} = 4^{-1} \quad \text{OR} \quad \frac{1}{4} = \frac{1}{2^2} = 2^{-2}$$

$$\frac{1}{9} = 9^{-1} \quad \text{OR} \quad \frac{1}{9} = \frac{1}{3^2} = 3^{-2}$$

$$\frac{1}{81} = 81^{-1} \quad \text{OR} \quad \frac{1}{81} = \frac{1}{9^2} = 9^{-2}$$

$$x^m$$

$$x^y$$

$$x^{\wedge}$$

Try: i)  $\frac{1}{8} = 2^{-3} \checkmark$

iv)  $\frac{1}{27} = 3^{-3} \checkmark$

!! vii)  $\frac{1}{27^3} = 3^{-9} \checkmark$

ii)  $\frac{1}{25} = 5^{-2} \checkmark$

v)  $\frac{1}{100} = 10^{-2} \checkmark$

viii)  $\frac{1}{64} = 2^{-6} \checkmark$

$$\text{ii) } \frac{1}{25} = 5^{-2} \checkmark$$

$$\text{v) } \frac{1}{100} = 10^{-2} \checkmark$$

$$\text{viii) } \frac{1}{64} = 2^{-6} \checkmark$$

$$\text{iii) } \frac{1}{32} = 2^{-5} \checkmark$$

$$\text{vi) } \frac{1}{16} = 2^{-4} \checkmark$$

HOW TO CHANGE INTO NEG EXP. POWER? DETERMINE IF # IS PERFECT SQUARE,  
CUBE, 4<sup>th</sup> ROOT ...

Assignment: U1L4 wkst: 1-27, 28, 30, 32 /30