

Date: _____

Zero and Negative Exponents

Investigate:

Use your calculator to complete the following table. Make decimals into fractions!

2^2	3^2	4^2
2^1	3^1	4^1
2^0	3^0	4^0
2^{-1}	3^{-1}	4^{-1}
2^{-2}	3^{-2}	4^{-2}

Zero Exponents:

Any base raised to the exponent zero will equal _____.

Rule: $a^0 =$	Example: $3^2 \times 3^{-2} =$
---------------	--------------------------------

Negative Exponents:

Any base raised to a negative exponent is equal to the _____ of the base raised to a _____ exponent.

Rule: $(\frac{a}{b})^{-c} =$	Example: $5^{-3} =$
------------------------------	---------------------

Practice Problems: Express the following statements as a single power, then evaluate. BEDMAS STILL APPLIES, AND VARIABLES DON'T CHANGE THE RULES!

a) $4^4 \times 4^{-4}$

b) $\frac{2^9}{2^9}$

c) $(3^0)^2$

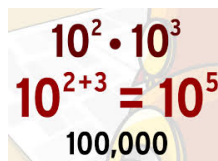
d) $\frac{5^2 \times 5^3}{5^5}$

e) $\frac{(\frac{1}{4})^5 (\frac{1}{4})^3}{(\frac{1}{4})^{10}}$

f) $[y(y^{-3})^3]^3$

g) $\frac{(m^{-5})^2}{m^{-3}}$

h) $\frac{b(b^5)b^4}{b^5}$



$10^2 \cdot 10^3$
 $10^{2+3} = 10^5$
100,000