**EMA Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**Exponent Rules Date\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_\_\_\_\_\_**



**Exponents**

***Practice***

1.  2.  3. 

4.  5.  6. 

**Power of One and Zero as an Exponent**







 ***FORMULAS***

Therefore….  and 

***Practice***

7.  8.  9.  10. 

11.  12.  13. = 14. 

**Negative Exponents**

**\*\*\*Can NEVER, EVER have a negative exponent.**

 ***FORMULA***

 

***Practice***

15.  16.  17. 

18.  19.  20. 

21.  22.  23. 

 ***FORMULA***

24.  25.  26. 

27.  28.  29. 

30. $\frac{7}{3^{-2}xy^{-3}}=$ 31. $\frac{2x}{5^{-2}2^{-2}y}$ = 32. $\frac{312^{0}4^{-2}}{12^{-1}}=$

**Multiplying Powers With Same Base**

 ***FORMULA***

$$a^{m}∙a^{n}=a^{m+n}$$

33.  34.  35. 

36.  37.  38. 

39.  40.  41. 

**Power of a Power**

 ***FORMULA***



42.  43.  44. 

45.  46.  47. 

48.  49.  50. 

**Raising a Product to a Power**

 ***FORMULA***



51.  52.  53. 

54.  55.  56. 

57.  58.  59. 

**Dividing Exponents with Same Base**

 ***FORMULA***



60.  61. $\frac{x^{5}}{x^{2}}$ 62. $\frac{12y^{2}}{4xy}$

63. $-\frac{24xy^{-3}}{8x^{2}y^{3}}$ 64. $\frac{25m^{3}n^{4}p^{5}}{100n^{-2}p^{8}}$ 65. $\frac{3^{4}x^{-2}y^{4}z^{-6}}{27x^{-4}y^{4}z^{4}}$

**Raising a Quotient to a Power**

 ***FORMULA***

$$\left(\frac{a^{m}}{b^{m}}\right)^{n}=\frac{a^{mn}}{b^{mn}}$$

66. $\left(\frac{3^{2}}{4^{3}}\right)^{2}$ 67. $\left(\frac{x^{5}}{y^{4}}\right)^{4}$ 68. $\left(\frac{2x^{3}y^{2}}{3xy^{4}}\right)^{3}$

69. $\left(\frac{4x^{2}y^{-3}}{3xy^{7}}\right)^{2}$ 70.) $\left(\frac{-3m^{-2}}{5n^{-4}}\right)^{-2}$ 71.) $\left(\frac{-4x^{3}y^{-2}}{5x^{-2}y^{-6}}\right)^{-3}$

**Exponent Rules - Recap**

$a^{0}=$$\frac{1}{a^{-1}}=$

$\left(a^{m}\right)^{n}=$$\left(a^{m}b^{m}\right)^{n}=$

$\left(\frac{a^{m}}{b^{m}}\right)^{n}=$$\frac{a^{m}}{a^{n}}=$

$a^{-1}=$$a^{m}⋅a^{n}=$