Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Laws of Exponents Notes**

There is a set of rules for evaluating expressions involving integral exponents. These are known as exponent laws. We will only be working with positive exponents this year. Remember if no exponent is written, it is to the first power.

1. Product of Powers: am x an = am+n

What this means is … if you are multiplying powers with the same base, just leave the base the same and add the exponents

Example: 32 x 34 = (3 x 3) x (3 x 3 x 3 x 3) = 36 = 729

 You try: 53 x 57 =

1. Quotient of Powers: am ÷ an = am-n

What this means is … if you are dividing powers with the same base, just leave the base the same and subtract the exponents.

 Example: 38 ÷ 33 = $\frac{3x3x3x3x3x3x3x3}{3x3x3}=$35 = 243

 You try: 212 ÷ 24 =

1. Power of a Product: (ab)m = ambm

What this means is … if you are raising a multiplication statement (a product) to a power, you can raise each base in the statement to the power individually.

 Example: (3 x 4)3 = 33 x 43 = 1728

 You try: (8 x 2)4 =

1. Power of a Quotient: $(\frac{a}{b})^{m}=\frac{a^{m}}{b^{m}}$

What this means is … if you are raising a fraction (a quotient or division problem) to a power, you can raise each base in the statement to the power individually.

 Example: $(\frac{2}{3})^{3}=\frac{2^{3}}{3^{3}}=\frac{8}{27}$

 You try: $(\frac{1}{8})^{2}=$

1. Zero Power: a0 = 1

What this means is … if you are raising any number or variable to the zero power the answer is one.

 Example: 250 = 1

 You try: 990 =