MAT126 Math Interludes Student Name:_____
Topic #13: Basic Rules of Integer Exponents Due Date:_____

Simplify each expression below. Your answers should have positive exponents only. Write your answers as simplified fractions (not decimals) when appropriate. Show all work!

1. $4(-3)^2$	2. 5^{-2}	3. 3^{-3}
4. $6(2)^{-3}$	5. 6^0	6. $2(4)^{-1}$
7. -6^0	8. $-7(2)^0$	9. $5(5)^{-3}$
10. 4^{-3}	11. $8^0 + 6^0$	12. $(5x)^0$
13. $4^{-1} + 3^{-1}$	14. $-2(8)^{-1}$	15. $5x^0$

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Use the Exponent Rules presented in class to simplify the expressions below. Your answers should have positive exponents only. Show all work.

Exponent Rules

Assume that a and b are nonzero real numbers, and m and n are any integers.

1) Zero Property of Exponent

$$b^0 = 1$$

2) Negative Property of Exponent

$$b^{-n} = \frac{1}{b^n} \quad \text{OR} \quad \frac{1}{b^{-n}} = b^n$$

3) Product Property of Exponent

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

4) Quotient Property of Exponent

$$\frac{b^m}{b^n} = b^{m-n}$$

5) Power of a Power Property of Exponent

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

6) Power of a Product Property of Exponent

$$(ab)^m = a^m b^m$$

7) Power of a Quotient Property of Exponent

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

1. $\dfrac{x^{-2}}{y^{-3}}$
2. $x^{-3} \cdot x^7$
3. $(2x^3y^9)(7x^2y^2)$
4. $\dfrac{x^7}{x^4}$
5. $\dfrac{x^2y^9}{x^7y^5}$
6. $\dfrac{x^{-9}y^3}{x^{-7}y^8}$
7. $\left(x^5\right)^3$
8. $(2^3x^7y^6)^2$

Now try these!!!

9. $\left(\dfrac{3x^4}{y^6}\right)^3$
10. $\dfrac{\left(x^2y^{-2}\right)^{-3}}{xy^6}$
11. $\left(2xy^2\right)^3(3x)^2$