**Algebra II Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

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| **Unit: 5** | **Homework**: 5 |
| **Standard**: **Build new functions from existing functions**  **MGSE9-12.F.BF.5 (+)** Understand the inverse relationship between exponents and logarithms and use this relationship to solve problems involving logarithms and exponents.  |
| **Essential Questions:** What is the inverse of an exponential function? |
| **Key Words**: logarithm, common logarithm, logarithmic function |
| **1. Write each exponential expression as a logarithm or logarithm as an exponential expression** |

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| a. 24 = 16  | b. 112 = 1 | c. 5-2 = 1/25  | d. 15 2 = 225 |
| e. 7 3 = 343 | f. *a b* = *c* | g. 3-1 = 1/3 | h. 203 = 8000 |
| i. log6 216 = 3 | j. log4 1024 = 5 | k. log9 729 = 3 | l. log3 1/9 = -2 |
| m. log 1000 = 3 | n. log*p* *q* = *r* | o. log2 64 = 6 | p. log8 512 = 3 |
| 2. Evaluate each expression using mental math. |
| a. log6 65   | b. log2 (1/16)  | c. log11 11  | d. log2 32  | e. log8 512 |
| 3. Solve each logarithmic equation for x.  |
| a. logx 49 = 2  | b. logx 16 = -4  | c. log6 216 = x  | d. log10  = x  |
| 4. Solve each of the following for x using common logarithms. |
| a. 10x = 21  | b. 4 (10x) = 5320  | c. 10x = .1765  | d. -4 (10x) + 250 = - 6500 |