Log Lesson 2

1.1 recognize the logarithm of a number to a given base as the exponent to which the base must be raised to get the number, recognize the operation of finding the logarithm to be the inverse operation (i.e., the undoing or reversing) of exponentiation, and evaluate simple logarithmic expressions

***Sample problem:*** *Why is it not possible to determine log10 (– 3) or log20? Explain your reasoning.*

1.2 determine, with technology, the approximate logarithm of a number to any base, including base 10

***Sample problem:*** *Without a calculator estimate log329 (e.g., by reasoning that log329 is between 3 and 4 and using systematic trial to determine that log329 is approximately 3.07)*

1.3 make connections between related logarithmic and exponential equations (e.g., log5125 = 3 can also be expressed as 53 = 125), and solve simple exponential equations by rewriting them in logarithmic form (e.g., solving 3x = 10 by rewriting the equation as log310 = x)

***Sample problem:*** *Express log5125 = 3 as an exponential expression.*

***Sample problem:*** *Solve 3x = 10*

3.3 solve simple logarithmic equations in one variable algebraically

***Sample problem:*** *Solve for x, log3(5x + 6) = 2*

***Sample problem:*** *Solve for x, log10(x + 1) = 1*

Solve exponential equations in one variable by determining a common base

***Sample problem:*** *Solve 4x = 8x+3 by expressing each side as a power of 2 and by using logarithms (e.g., solve 4(x) = 8(x+3) by taking the logarithm base 2 of both sides)*

***Sample problem:*** *Solve 3x= 7 by taking the logarithm base 10 of both side.*

