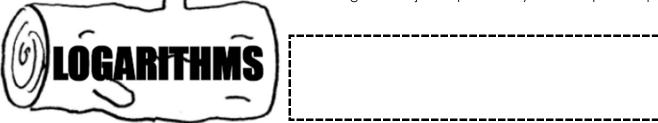
Math 3

2.3 Intro to Logarithms

Unit 2 Day 3

OBJ: simplify and solve simple logarithm equations.

A logarithm is just a special way to ask a specific question.



THE QUESTION: What <u>exponent</u> is required to go from a <u>base "b"</u> to reach a value of <u>"a"</u>?

Note: Log x is a log that has no base written, it is implied that the base is _____.

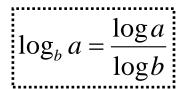
Exponential Form	Logarithmic Form	
	-	
Example:	Example:	

SWOOSH Method

Used to convert between exponential form and logarithmic form (and vice versa)!

Logarithmic Form:	$\log_4 64 = y$		$\log_u \frac{15}{16} = v$		$\log_{\frac{7}{4}} x = y$	
Exponential Form:		$343^{x} = 7$		$\left(\frac{1}{5}\right)^x = y$		<i>b^a</i> =123





Used when evaluating a logarithm that is <u>not</u> already in base 10. Be sure to write each out, and then evaluate using your calculator and the LOG button!

Example:	$\log_4 64$	$\log_3\frac{1}{243}$	$\log_2 4$	$\log_2 16$	$\log_6 \frac{1}{216}$	log ₅ 125
Written As:						
Solution:						

Solving using Simple Logarithms

SWOOSH Method	Change of Base	Log = Log
Log#(x) = #	$Log_{\#}(\#) = x$	Log(x) = Log(x)
Use when a variable is attached to the logarithm.	Use when a constant is attached to the logarithm.	Use when <u>one</u> log is = to <u>one</u> other log. Logs must have the same base in order to cancel.

Example 1: Solving using the SWOOSH Method

a) $Log_2(2x + 1) = 4$

b) $Log_4(17x - 4) = 3$

c) Log(2x-5) = 2

Example 2: Solving using Change of Base

a) $Log_28 = 3x + 3$

b) $Log_5 125 = x^2 - 2x$

c) $Log_216 = x^2$

Example 3: Solve by canceling the logs!

a) $\log_4(3x-1) = \log_4(2x+3)$ b) $\log_4(3x-1) = \log_4(2x+3)$

b) $\log_2(x-6) = \log_2(2x+2)$