Name _____
Date _____ Period _____

Logarithmic Equations

an equation that can be written in the form...

$$\log_b x = y$$

Let b and x be positive numbers, and $b \neq 1$. The logarithm base b of x is defined as follows:

$$\log_b x = y \text{ if and only if } x = b^y$$

Changing from Logarithmic Form to Exponential Form

$\log_b x = y \longrightarrow x = b^y$

Logarithmic Form Exponential Form

$$\log_b x = y$$

Changing from Logarithmic Form to Exponential Form

$\log_b x = y \longrightarrow x = b^y$

Logarithmic Form Exponential Form

Write the following logarithmic equations in exponential form.

$\log_2 8 = 3$ $\log_3 81 = 4$ $\log_2 2 = 1$ $\log_{\frac{1}{2}} 8 = -3$

Changing from Exponential Form to Logarithmic Form

$x = b^y \longrightarrow \log_b x = y$

Exponential Form — Logarithmic Form

$$\log\ x = b^y$$

Changing from Exponential Form to Logarithmic Form

$x = b^y \longrightarrow \log_b x = y$

Exponential Form — Logarithmic Form

Write the following exponential equations in logarithmic form.

$9 = 3^2$ $\quad 64 = 2^6$ $\quad 1 = 5^0$ $\quad 16 = \left(\frac{1}{4}\right)^{-2}$

Logarithmic Form		Exponential Form
$\log_b x = y$	if and only if	$x = b^y$

$$x = b^y$$

$$\log_b x = y$$