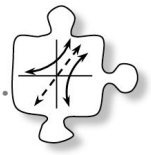
CW#___ Name:_____

5.2.2 What is a logarithm?

Defining the Inverse of an Exponential Function



#63 Another Ancient Puzzle

Fill in the table with your teammates

x	8	32	$\frac{1}{2}$	1	16	4	3	64	2	0	0.25	-1	$\sqrt{2}$	0.2	$\frac{1}{8}$
$g(x)$	3		-1					6							

a. Describe an equation that relates x and $g(x)$.

b. Look back at the Ancient Puzzle in problem #54. If you have not already done so, use the idea of the Ancient Puzzle to write an equation for $g(x)$.

c. Why is it difficult to think of an output for the input of 0 or –1?

d. What is the output for $x = 25$, to the nearest hundredth?

e. Using your equation from part (b) graph g(x) on a graphing calculator. How does g(x) compare to the exponential graph with the same base.

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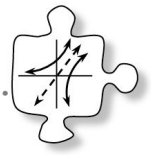

#65 Calculate each of the values below, then justify your answers by writing the equivalent exponential form.	
a. $\log_2(32) = ?$ Equivalent Exponential Form:	b. $\log_2\left(\frac{1}{2}\right) = ?$ Equivalent Exponential Form:
c. $\log_2(4) = ?$ Equivalent Exponential Form:	d. $\log_2(0) = ?$ Equivalent Exponential Form:
e. $\log_2(?) = 3$ Equivalent Exponential Form:	f. $\log_2(?) = \frac{1}{2}$ Equivalent Exponential Form: