Function Notation Practice

Name Key

Period _____ Date _____

Determine whether each of the following represents a function. ***EXPLAIN*** your answer.

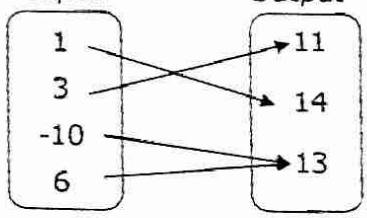
1. Input: State
Output: Capital of that state
Function - each state has only one capital

2. (3,2); (-1,4); (5,4); (8,-1)
Function - each input has exactly one output.

3. Input: State
Output: City in that state
not Function - each state has multiple cities.

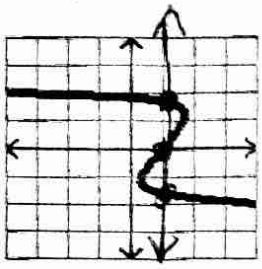
4. (4,1); (5,-1); (-2,0); (4,3)
Not a function - the input of 4 has 2 different outputs.

5.



Function - each input has exactly one output.

6.



Not a function - does not pass the vertical line test

Questions **#8-15** refer to the functions below:

$f(x) = x^3 - 4$
$g(x) = x - 5$
$h(x) = 3x - 6$
$j(x) = x^2 + 3x + 2$
$k(x) = (x+2)^2$
$m(x) = \sqrt{x-2}$
$n(x)$ = the day before x
$p(x)$ = x's birthday

The first one is done for you.

8. Find $f(1)$.
$f(x) = x^3 - 4$ ← Given
$f(1) = (1)^3 - 4 = 1 - 4 = -3$

9. Find $g(2)$. $= 2 - 5$
$g(2) = -3$

10. Find $h(3)$. $= 3(3) - 6 = 9 - 6$
$h(3) = 3$

11. Find $j(4)$. $= (4)^2 + 3(4) + 2$
$= 16 + 12 + 2$
$j(4) = 30$

12. Find $k(5)$. $= (5+2)^2 = (7)^2 = 49$

13. Find $m(6)$. $= \sqrt{6-2} = \sqrt{4} = 2$

14. Find n(March 19, 2008). = the day before March 19, 2008 = March 18, 2008

15. Find p(me). = my birthday = Feb. 29,

Function Notation Introduction

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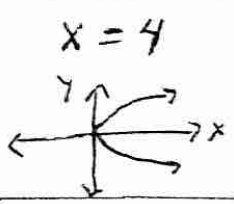
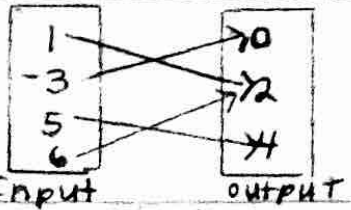
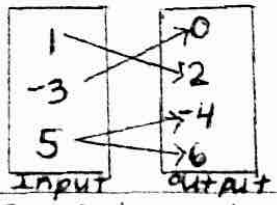
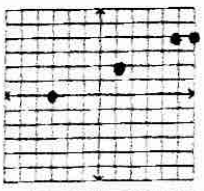
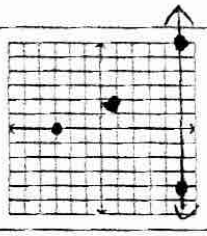
A **relation** is... a relationship between two quantities: input and output

A **function** is a special type of relation where... each input has exactly one output!

Think of a **soda machine:** input money and push button
output – 1 soda

	These ARE functions ☺	These ARE NOT functions ☹
Equation	$y = 3$ $y = \frac{2}{3}x - 4$ $y = (2)^x$ $y = -(\frac{1}{3})^x$ 	$x = 4$  
Mapping	 It's okay to have 2 buttons for the same kind of soda!	 It's not okay for 1 button to give 2 different kinds of soda!
Table	Input | output 1 | 2 -3 | 0 5 | 4 6 | 4	Input | output 1 | 2 -3 | 0 5 | -4 5 | 6
Ordered Pairs	$\{(1,2), (-3,0), (5,4), (6,4)\}$	$\{(1,2), (-3,0), (5,-4), (5,6)\}$
Graph	 No vertical Line hits more than 1 point on the graph	 vertical Line hits more than 1 point on the graph