NAME: _____

Determining Functions Interactive Notes

VOCABULARY:

Relation: A **relation** is a set of ordered pairs.

Domain: The **domain** of the relation is the set of all first components of the ordered pairs. This is also called the **x value** or the **input**.

Range: The **range** of the relation is the set of all second components of the ordered pairs. This is also called the **y value** or the **output**.

Now we will consider a special kind of relation called a function.

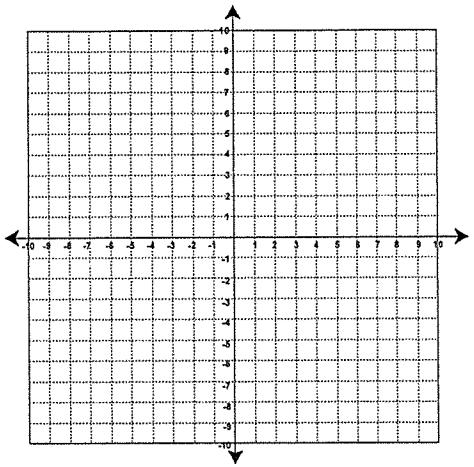
Function: In order for a relation to be called a **function**, each x value must have exactly one y value. You cannot have two or more y values or no y values.

Vertical Line Test: This is a special test that can be used to determine if a graph is a function. If you can draw a vertical line so that it intersects a graph more than once, the graph is **NOT A FUNCTION**. If you cannot draw a vertical line that intersects a graph more than once, then the graph **IS A FUNCTION**.

1.) { (- 2, 5), (-1, 2), (0, 1), (2, 5) }

Does this relation represent a function?

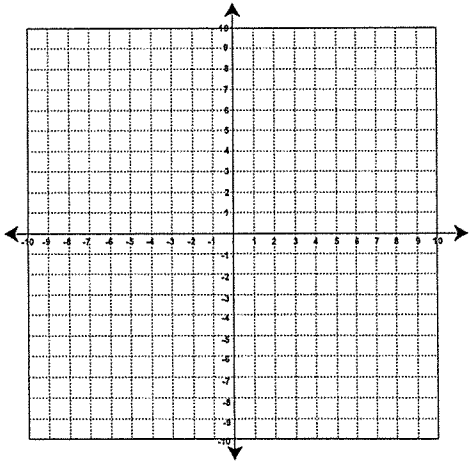
Why or why not?



2.) { (2, 8), (- 3, -7), (0, 2), (-1, - 1) }

Does this relation represent a function?

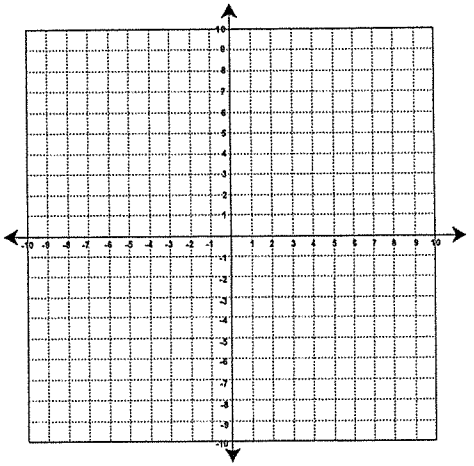
Why or why not?



3.) { (2, 0), (2, 4), (0, 2), (4, 2) }

Does this relation represent a function?

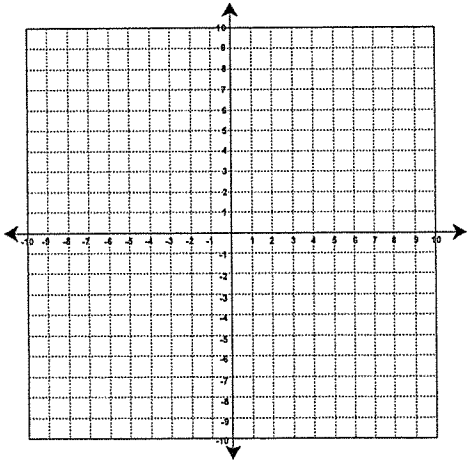
Why or why not?



4.) { (- 3, 3), (-4, 4), (- 3, - 3), (0, 0) }

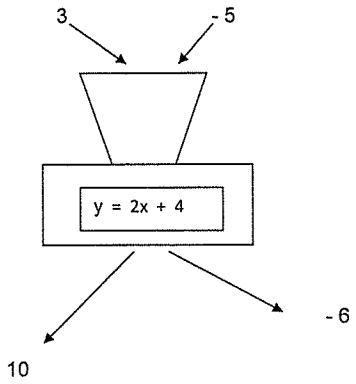
Does this relation represent a function?

Why or why not?



If it helps, think of a function as a machine that has been programmed with a certain correspondence or rule. An input value is then fed into the machine, the machine does the correspondence or rule, and the result is the output.

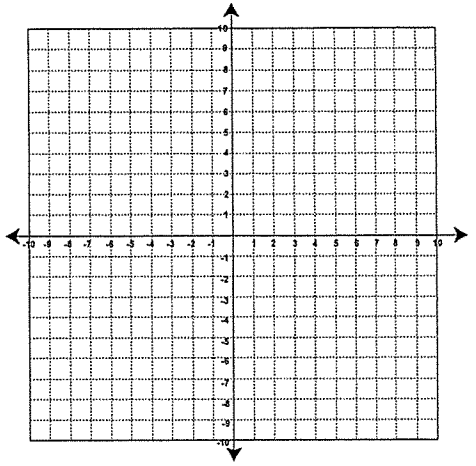
Function Machine



5.) Make a table of more ordered pairs for this function.

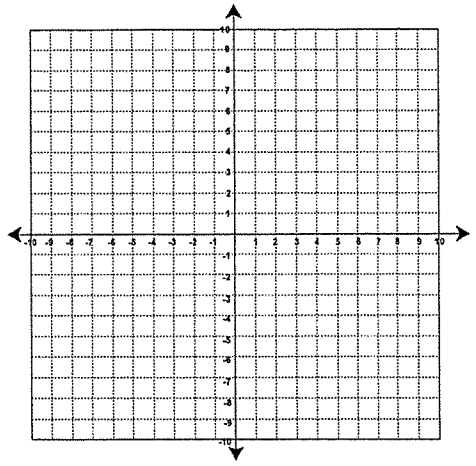
x Input Domain	Correspondence Rule	y Output Range
	y = 2x + 4	
	y = 2x + 4	
	y = 2x + 4	
	y = 2x + 4	
	y = 2x + 4	
	y = 2x + 4	
	y = 2x + 4	

6.) Graph the function y = 2x + 4



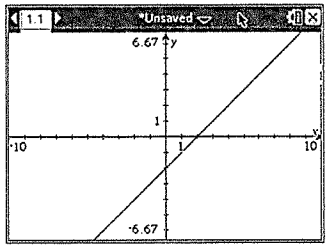
7.) Make a table of values and graph the function y = -2x + 3

x	y



Let's practice looking at graphs and determining if the graph is a function.

8.)



Function or Not a Function

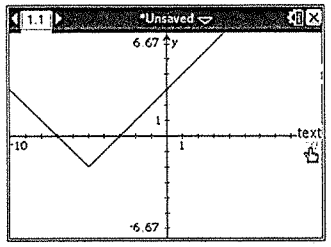
Why or Why Not?

_____

_____

_____

9.)



Function or Not a Function

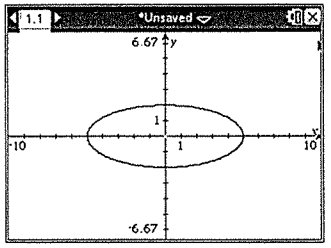
Why or Why Not?

_____

_____

_____

10.)



Function or Not a Function

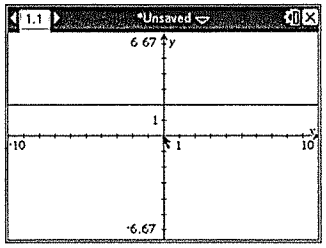
Why or Why Not?

_____

_____

_____

11.)



Function or Not a Function

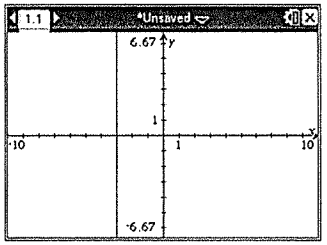
Why or Why Not?

_____

_____

_____

12.)



Function or Not a Function

Why or Why Not?

_____

_____

_____

Name_____ Date_____ Hour_____

Evaluating Functions & Writing Domain/Range **Notes**

Example 1) Write the following function in function notation $y = 2x - 4$	Your Turn 1) Write the following function in function notation $y = -3x + 5$
Example 2) Evaluate the following function If $f(x) = -2x + 5$, then find $f(4)$	Your Turn 2) Evaluate the following function If $f(x) = 4x - 1$, then find $f(-2)$
Example 3) Evaluate the following function If $f(x) = x^3 + 5(x - 2)$, then find $f(-1)$	Your Turn 3) Evaluate the following function If $f(x) = 3x^2 - 2(x + 4)$, then find $f(3)$
Rules for writing the domain and range 1. _____ 2. _____	
Example 4) State the domain and range of the following relation $\{(4,0),(-2,4),(6,-1),(-4,0)\}$	Your Turn 4) State the domain and range of the following relation $\{(-2,-9),(3,2),(5,4),(8,-3),(3,5),(1,7)\}$