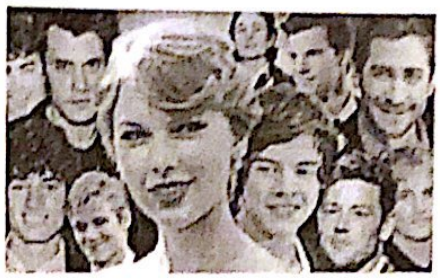
Date: _____ Hour: _____

2 Day 9: Functions vs. Relations

Focus Question: How can I tell if a relationship is a function?



A. Functioning Mathematical Relationships

1. Define **Relationship** as it pertains to everyday life

How people are paired up

In mathematics a **relation is anything that can come in pairs.**

2. What are some ways that we can show relations in math?

ordered pairs

IV/DV

3. What does function mean in your normal every day usage?

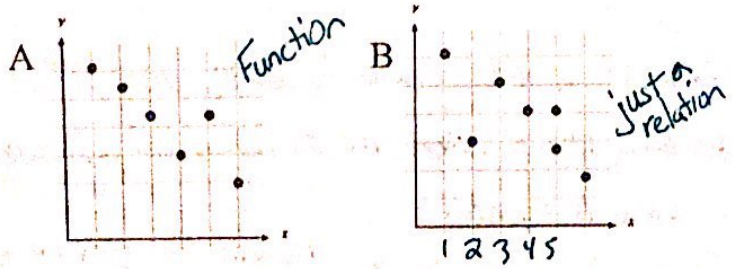
4. What are some things that make/help a relationship function?

y-value

x-value

Function in math means **a special relation in which each value of the independent variable has exactly one related dependent value.** We can think of this like a marriage or functioning relationship. An independent person can date as many people as they want (relation), but they can only marry one person at a time (function). Or, relationships only function if you date one person at a time.

5. **Both graphs below are relations,** but only one of them is a function; which one? A Explain.



"A" is a function because each x-value has only one y-value. Graph "B" the x-value of 5 has 2 y-values, so it is not a function

"The **vertical line test**" is a short cut for determining if a graph is a function. Because independent variables are on the x axis, you can imagine a vertical line. If the graph touches the vertical line in more than 1 place, then it is not a function. This is because each point the graph touches your vertical line represents a dependent value.

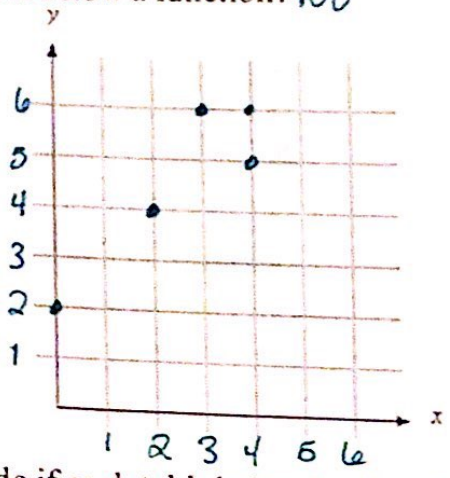
Look back at the 8 scatter plots from our class graphing. Tell whether each one is a Function or plain relation.

Graph #	1	2	3	4	5	6	7	8
Function or plain relation								
Explanation								

B. Tables and Functions

6. Is the table below a function? No

x	y
0	2
2	4
3	6
4	5
4	6



7. What could you have looked for on the table so that you wouldn't have to make a graph to decide if a relation is a function?

I could have just looked at the x-values to see if there were any listed twice

8. Decide if each table below is a function or simply a relation. Explain.

x	y
4	2
2	2
0	0
-2	-2
-4	-4

Function because no x-values are repeated

x	y
4	4
2	2
0	0
2	-2
4	-2

Just A relation because the x-value of 2 and 4 are repeated on the table

x	y
4	4
2	2
0	0
2	2
4	4

Just a relation for the same reason as the previous one

x	y
4	2
2	7
0	0
-2	4
-4	-4

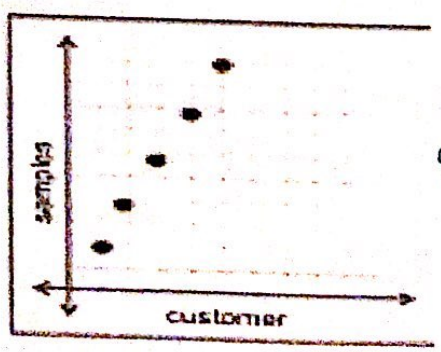
Function because no x-values are repeated

9. Marlee was given the following table and asked if it represented a function. She said "*No, it is not a function because the y is always 7.*" Explain Marlee's error(s) in reasoning.

X	Y
-2	7
-1	7
0	7
1	7
2	7

1) A table of x and y values is being presented
2) I am being asked to believe that the table is not a function because the y-value is repeated
3) Her error is in thinking that because the y-value is repeated it is not a function
4) I believe it is a function because all the x-values have only one y-value

10. Jake was given the graph below and asked if it represented a relation, a function, or both a relation and function. He answered "*It is a function because each x only has one y.*" Explain Jake's error(s) in reasoning."



1) a graph that shows the relation between customers and samples
2) We are asked to believe that is a function
3+4) His error is that it is a function, but it is also a relation between customers and samples