Sec 2-1: Relations and Functions

Relation

A set of ordered pairs

(a bunch of points)

Function

A kind of relation where each x is paired with one and only one y.

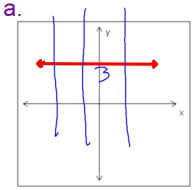
Each input produces only one output

Which of the following is correct?

1. Every Relation is a Function
2. Every Function is a Relation

Is each of the following a function?

a.



Yes

X	Y
0	3
-2	3
1	3

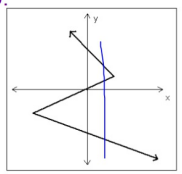
No x values repeat

What is the Vertical Line Test?

A test to see if a graph represents a function

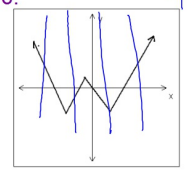
If any vertical line intersects a graph more than once the graph is NOT a function.

b.

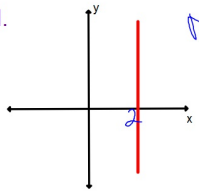


NO FAILS THE VERTICAL LINE TEST!

c. Yes



d. NO



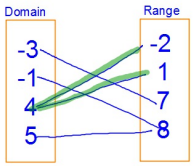
X	Y
2	1
2	2
2	3

FAILS THE VERTICAL LINE TEST!

Is the following relation a function?

$(5,8),(4,-2),(-3,7),(4,1),(-1,8)$

Mapping Diagram:



NO

X	Y
5	8
4	-2
-3	7
4	1
-1	8

Is each of the following relations a function?

a) $(1,3),(2,3),(-4,-1),(5,5)$

Yes

b) $(-7,4),(-1,9),(9,3),(-1,6)$

No

What is Function Notation?

- Another way to write y=
- Instead of writing $y = x^2 + 1$

  Function Notation writes it as: $f(x) = x^2 + 1$
- How do you say "f(x)"? "f of x"
- f is the function name
- x is the independent variable (domain)

Given $g(x) = x^2 - 2x$

$g(-5) = 35$
$g(0) = 0$
$g(2) = 0$
$g(5) = 15$

Find the Range for the following Domain: $\{-5, 0, 2, 5\}$

Range y: $\{0, 15, 35\}$

Given f(x) = 8 - 2x

$20 = 8 - 2x$
$12 = -2x$

Find x if f(x) = 20

$x = -6$