WARM UP: Copy and Complete

Complete the table of values for:

$y = 2x + 3$

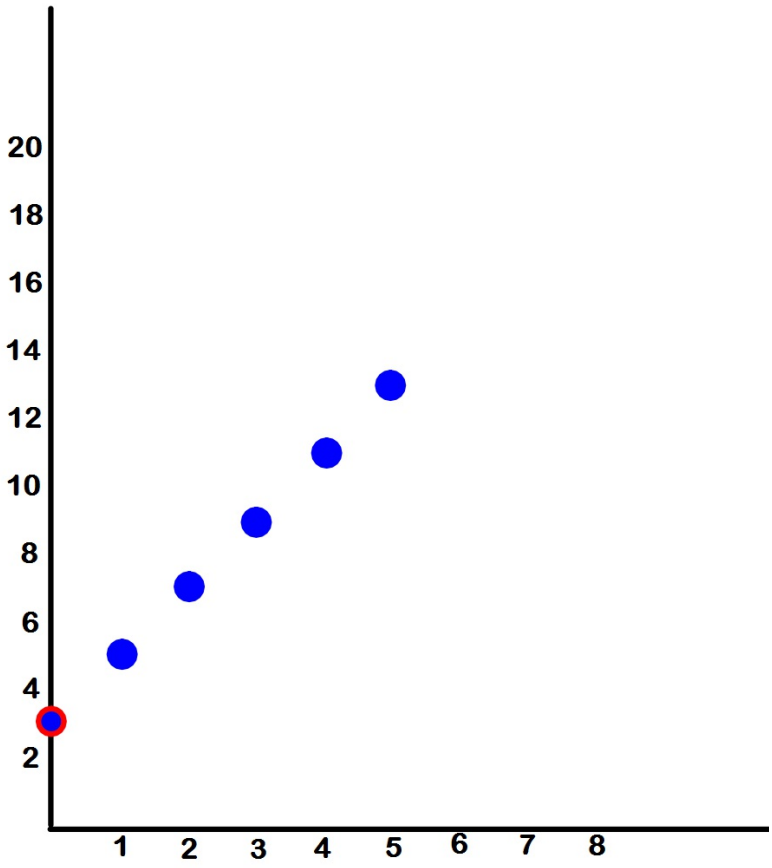
x	y = 2x + 3	y
0	$y = 2(0) + 3$	
1		
2		
3		
4		
5		

y = 2x + 3

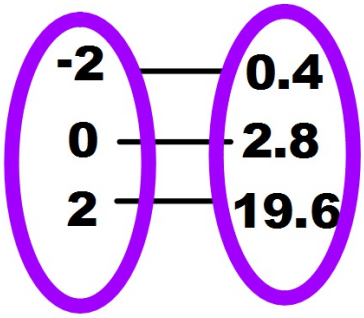
WARM UP: Copy and Complete

Graph the equation for:

$y = 2x + 3$



Introduction to Functions/Relations

Relation:	**A set of ordered pairs written in the form (x , y)**
Domain:	**X values, INPUT, of a relation**
Range:	**Y values, OUTPUT, of a relation**
Vertical Line Test	**Used to determine if a graph is a function.**
Mapping Diagram	**Used to determine if a set of points represents a function.** 

Function Notation

y= and f(x)= mean the same thing.

$y = 2x + 3$

IS THE SAME AS

$f(x) = 2x + 3$

Is the relationship in the table below a linear function? If so write an equation:

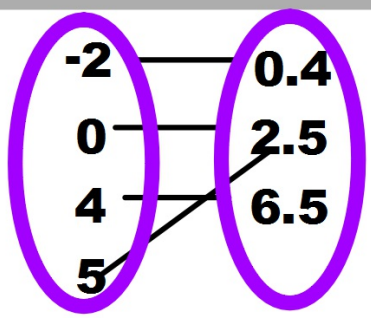
x	0	1	2	3
y	8	10	12	14

IMPORTANT

NOT ALL RELATIONS ARE FUNCTIONS

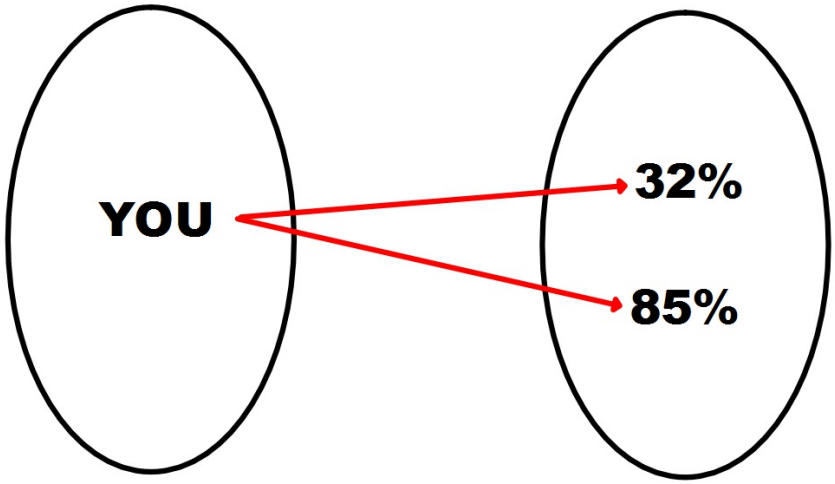
1. X values, the DOMAIN, cannot repeat

Example:



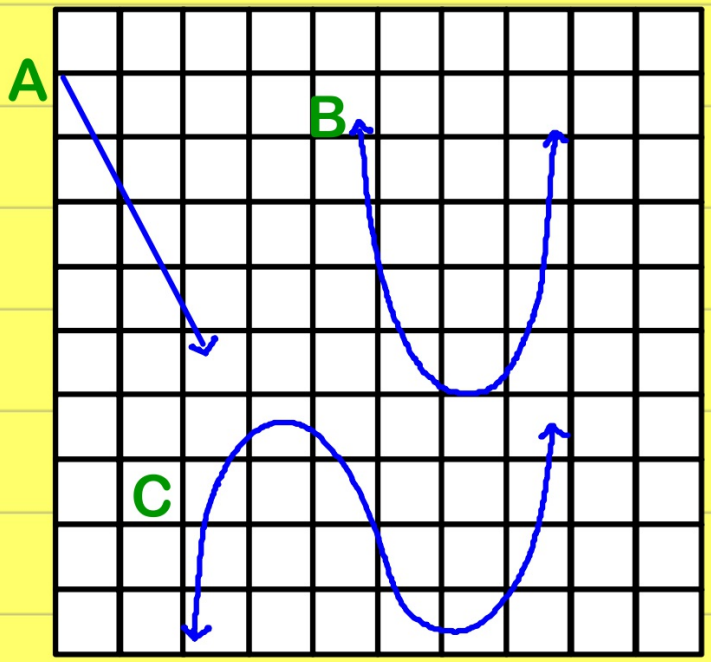
Last Thursday, you scored 32% on your science test. After attending tutoring with Mrs. Apple, and retaking the test, you scored an 85%. Is this relation a function?

- **Mapping Diagram**



HINT:
You can't be in two or more places at one time.

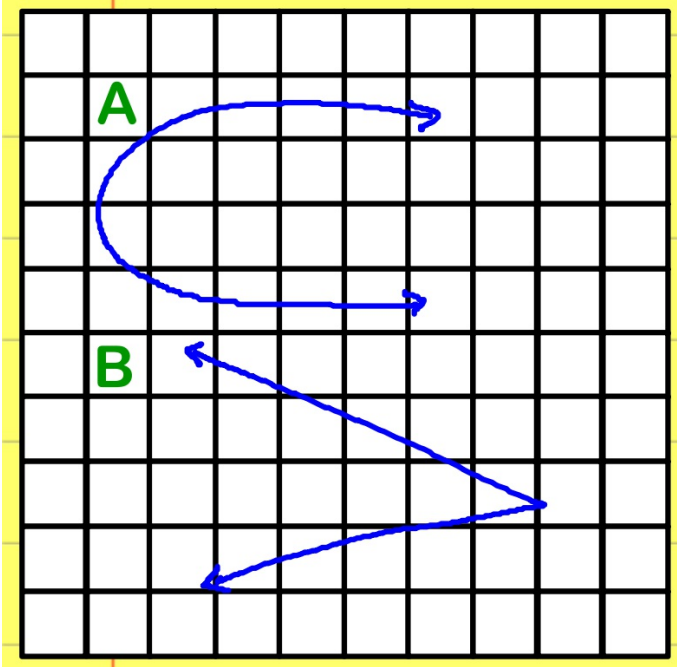
Vertical Line Test

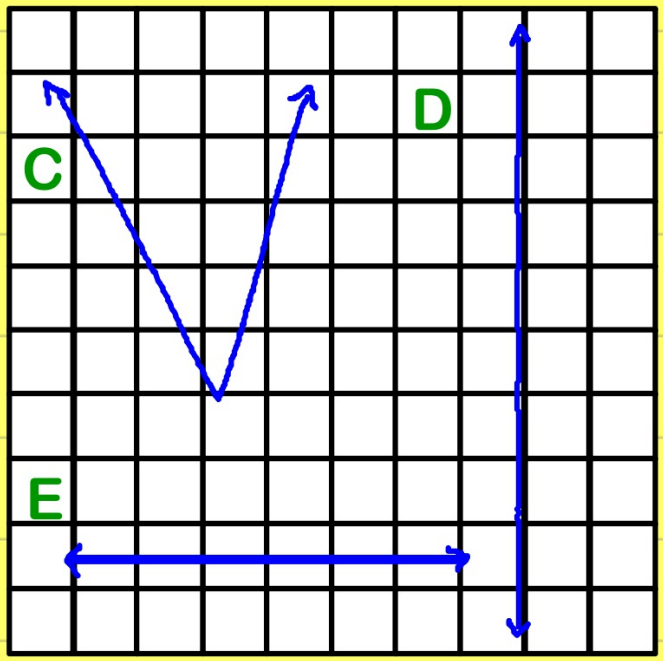


These are functions.

These are not.

Functions or not?





Example 1

Use the following points to determine if the relation is a function or not.

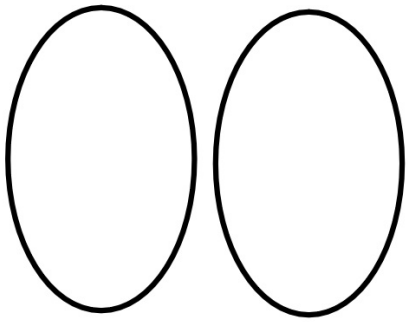
(-2 , 0) , (0 , 3) , (2 , 3), (3 , 5)

- **Identify the domain and range:**

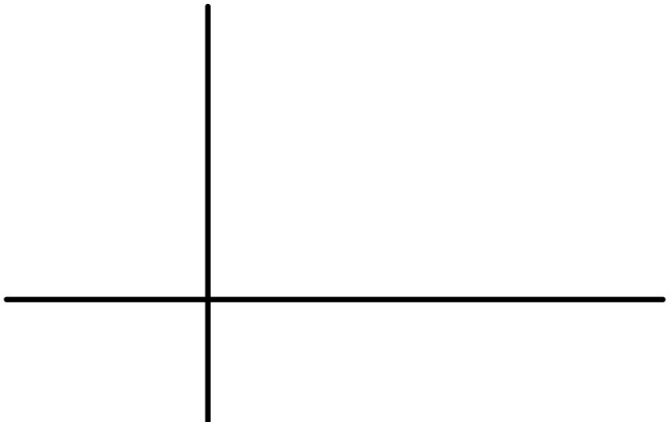
  Domain:

  Range:

- **Mapping Diagram**



- **Vertical Line Test:**



Example 2

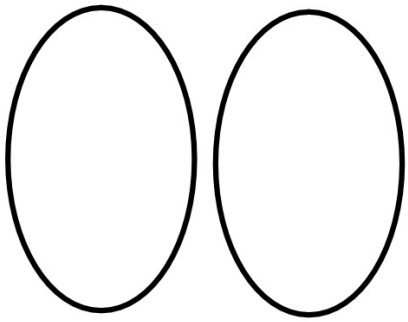
Use the following points to determine if the relation is a function or not. (-2 , 1) , (0 , 1) , (4 , 3), (0 , 3)

- **Identify the domain and range:**

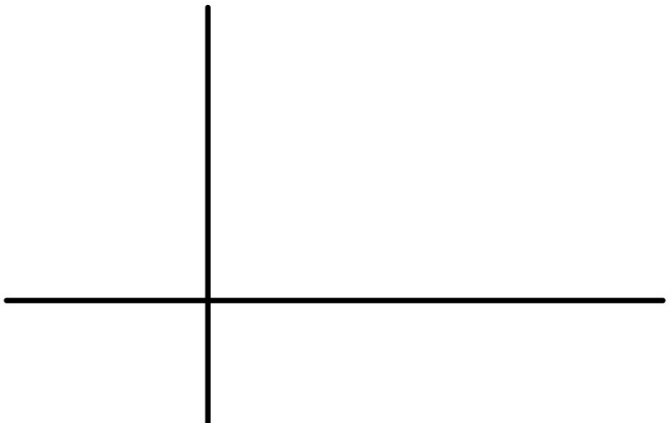
  Domain:

  Range:

- **Mapping Diagram**



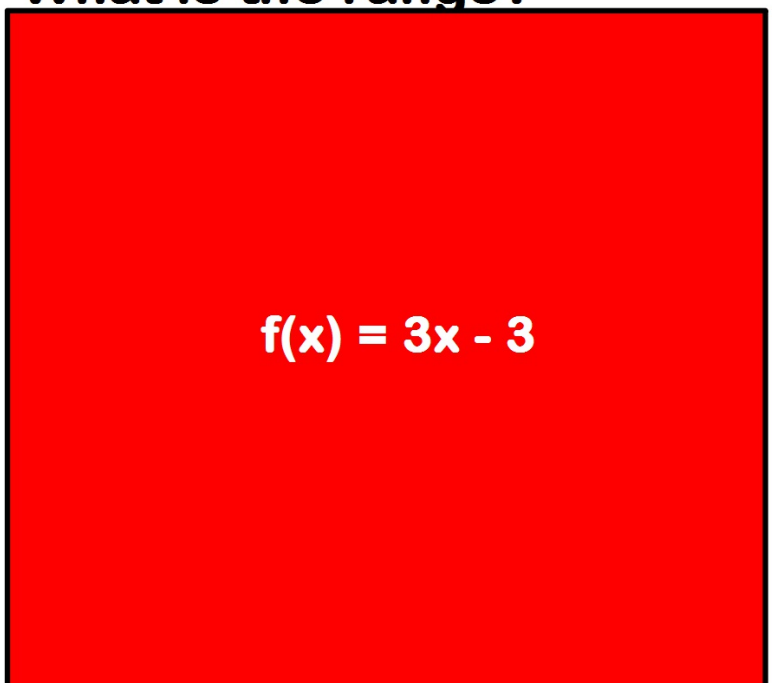
- **Vertical Line Test:**



Example 3

The domain of the function $f(x) = 3x - 3$ is $\{-2, -1, 0, 1, 2\}$.

What is the range?



Copy and Complete

Determine whether each set of relations is a *function or not.*

1. (2 , 3), (3 , 2), (4 , 5), (6 , 1)

2. (2 , 4), (3 , 9), (-2 , 4), (-3 , 9)

Patterns of Linear Functions

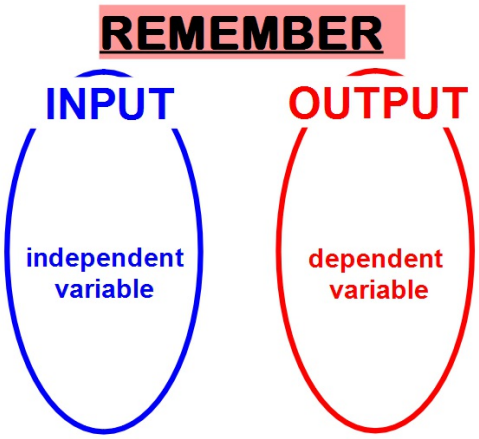
Which variable is the dependent variable?	**Dependent variable: changes in response to another variable**
In y = 2x + 3 which is dependent?	**the y depends on what x is and the y is also called the output.**
Which variable is the independent variable?	**Independent variable: it provides the input values**
What is a function?	**a relationship that pairs each input value (x) with exactly one output value (y)**
What is a linear function?	**a function that graphs a straight line**
How can I determine if a function is linear or non-linear?	The patterns of linear functions are constant and non-linear functions are not always constant.

x	y
2	0
4	3
6	6
8	9

Linear or Non-linear

x	y
1	1
3	4
5	8
7	10

Linear or Non-linear


REMEMBER
INPUT
OUTPUT
independent variable
dependent variable

Create a table with the following characteristics:

1. the dependent variable y, increases by two units each time x increases by one.

x	
y	

2. the dependent variable y, increases by three units each time x increase by two.

x	
y	

3. the dependent variable y, decreases by two units each time x increases by three.

x	
y	