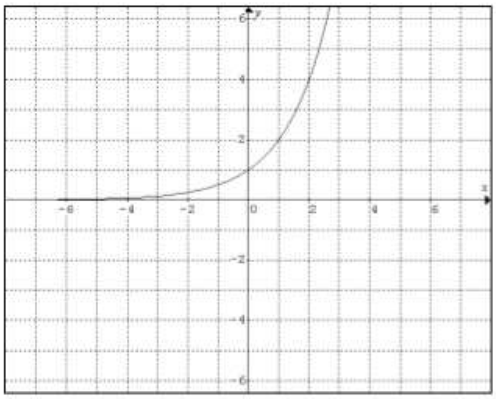
3.4 Representing Functions in Many Ways

We have been studying functions. they can be represented in many ways

Graphical



Table

X	Y
0	1
1	2
2	4
3	8
4	16
5	32

Equations

$y = 2^x$

Function: Each input (x) has one and only one output (y)

Function

Input (x)	Output (y)
1	1
2	2
3	4

Not a function

Input	Output
1	5
2	5
2	2
3	4

The above method is called a mapping diagram

For each mapping diagram

a) use a rule to describe the diagram
b) write an equation to represent the function

Input (x)	Output (y)
2	8
3	9
4	10
5	11

Rule: add 6 to x to get y.
Equation: $x+6=y$

$y=x+6$

Input (x)	Output (y)
6	36
7	49
8	64
9	81

Rule: mult. x by itself to get y.
Equation: $x \cdot x = y$

$x^2 = y$

Practice:

For each table: a) use a rule to describe the diagram
b) write an equation to represent the function

Input (x)	Output(y)
1 →	3
-2 →	-6
5 →	15
7 →	21
0 →	0
-3 →	-9

Rule: Mult x by 3

Eqn: $x \cdot 3 = y$

$3x = y$

# of hours worked x	Cost (c) in dollars of hiring a plumber y
0	50
1	85
2	120
3	155
4	190
5	225

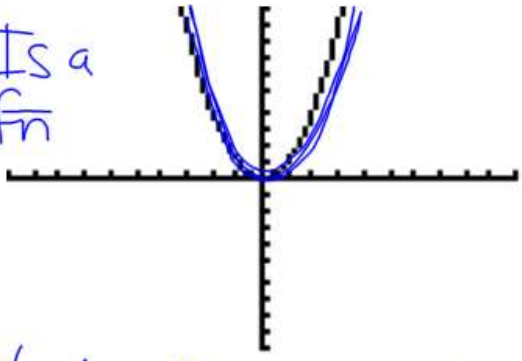
Rule: x mult by 35 then add 50.

Eqn: $y = 35x + 50$

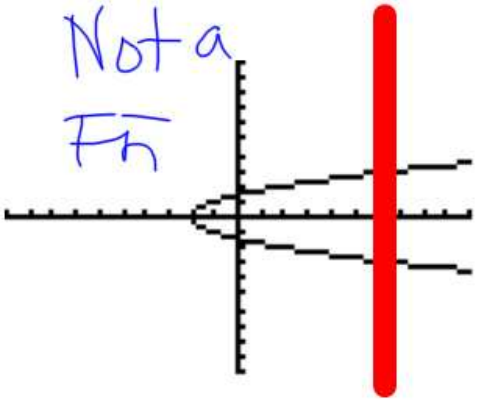
Determining if a Graph is a Function

Vertical Line test

Is a fn



Not a Fn



Vertical line test: If you pass a vertical line through your graph and the vertical line intersects the graph in 1 place then the graph is a function.

Complete the following tables

$y = 4 \cdot x$

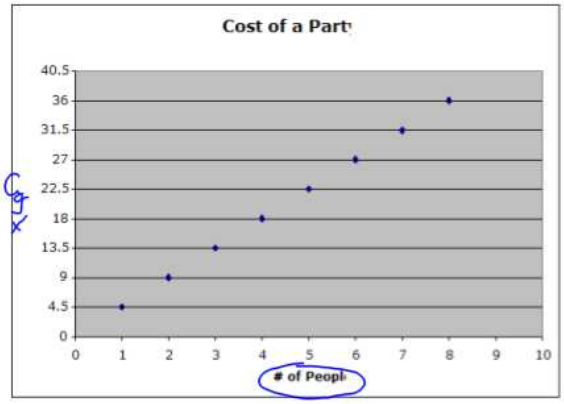
X	Y
1	4
2	8
3	12
4	16
5	20
6	24

$y = 3s + 2$

S	T
2	8
3	11
4	14
5	17
6	20
7	23

K	K^2+1
2	5
-1	2
4	17
7	50

Use the following graph to complete the table



# of people	Cost
1	4.50
2	9
4	18
5	22.50
7	31.5
8	36

For Jump Rope for Heart Megan collects pledges of $1.25 for every minute she jumps rope.

a) Create a table for 10 minutes of jumping

Time	Cost ($)
1	1.25
2	2.50
3	3.75
4	5
5	6.25
6	7.50
7	8.75
8	10
9	11.25
10	12.50

b) Use the table to write an equation relating time jumped and amount collected.

$y = 1.25x$