

# 8.1

## INTRODUCTION TO GRAPHS AND FUNCTIONS

### Kinds of equations

One variable  
equation

$$3x - 7 = 8$$

Two variable  
equation

$$3x + y = 5$$

The solution to a two variable equation  
is called an **ORDERED PAIR**.

$(x, y)$

### Example

State whether each ordered pair is a solution of

$$2x + y = 6$$

- a) (1,4)
- b) (-1,8)
- c) (2,-2)
- d)  $\left(\frac{5}{2}, 1\right)$

### Solving $y$ in terms of $x$

Do this by putting  $y$  by itself on one side of the equation

1)  $2x + 3y = 6$

## Solving $y$ in terms of $x$

Do this by putting  $y$  by itself on one side of the equation

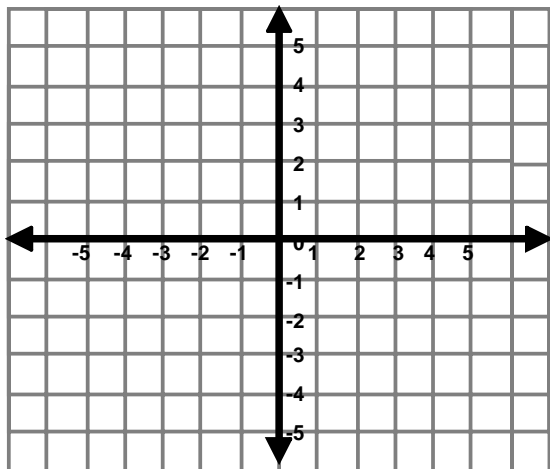
$$2) \quad 2x - y = 5$$

## Solving $y$ in terms of $x$

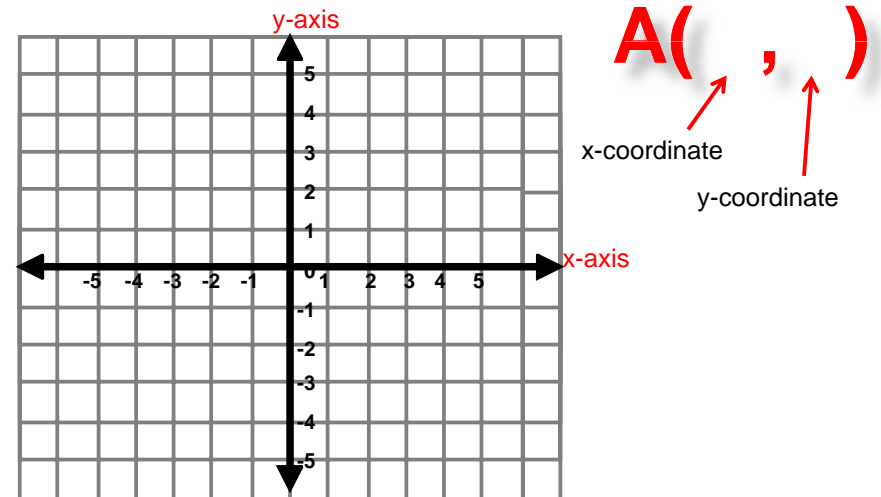
Do this by putting  $y$  by itself on one side of the equation

$$3) \quad 5x + 4y = 10$$

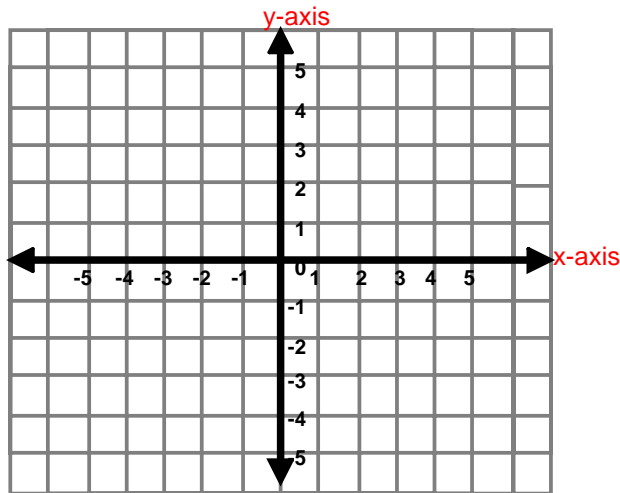
## COORDINATE PLANE



## COORDINATES



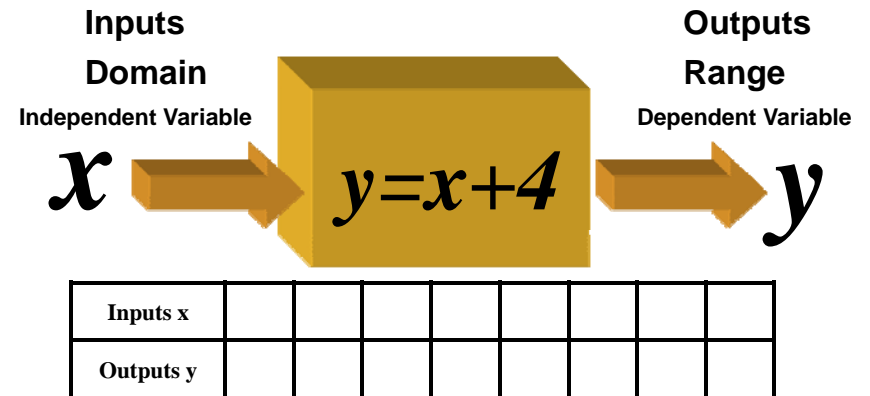
# PLOTTING POINTS



- A(5,2)
- B(-3,-4)
- C(-1,5)
- D(3,-5)
- E(4,6)
- F(0,0)
- G(4,0)
- H(0,-3)

# FUNCTIONS

A function is the relationship between inputs and outputs



# FUNCTIONS

Not all relations are functions. In order for it to be a FUNCTION, for every input  $x$  there has to be one output  $y$ .



*A cell phone is a good example - phone numbers go in, a specific person comes out.*

Input	Output	Input	Output	Input	Output
2	6	2	8	2	0
3	9	3	8	2	1
4	12	4	8	3	2
5	15	5	8	3	3
6	18	6	8	4	4

# FUNCTIONS

Not all relations are functions. In order for it to be a FUNCTION, for every input  $x$  there has to be one output  $y$ .

*A cell phone in a good example - phone numbers go in, a specific person comes out.*



This is a function

(0,3), (1,4), (2,5), (3,6)

This is **NOT** a function

(0,4), (1,7), (1,12), (2,6)

# FUNCTIONS

Not all relations are functions. In order for it to be a **FUNCTION**, for every input  $x$  there has to be one output  $y$ .  
A cell phone in a good example - phone numbers go in, a specific person comes out.

**Which relation is a function?**

- a)  $\{(-3,5), (5,-3), (-3,-3)\}$
- b)  $\{(2,3), (2,4), (2,5)\}$
- c)  $\{(5,7), (6,8), (7,9)\}$
- d)  $\{(2,6), (3,5), (2,5)\}$

# FUNCTIONS

Not all relations are functions. In order for it to be a **FUNCTION**, for every input  $x$  there has to be one output  $y$ .  
A cell phone in a good example - phone numbers go in, a specific person comes out.

**Decide whether the relation shown is a function. If it is a function, give the domain and range.**

