

NICKS & TRICKS

LUKE'S GUIDE TO JUNIOR CERT HL MATHS

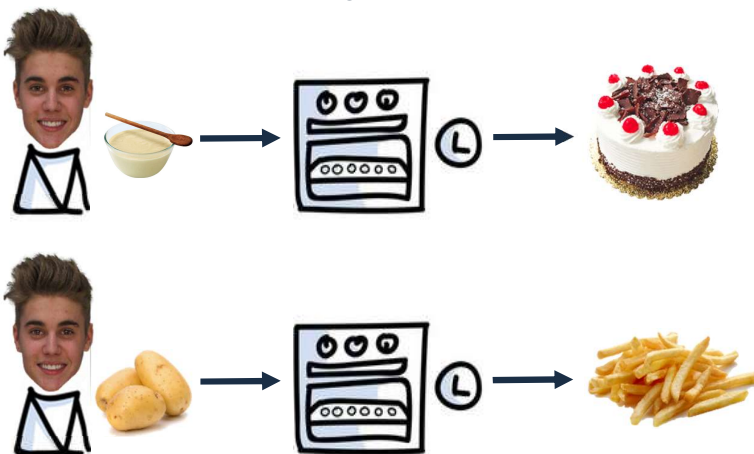
Topic 3 - Functions

Functions are all about **inputs** and **outputs**. **Graphs** are also an extremely important part of functions, with both **reading and making graphs** being involved in **most functions exam questions**. Learn the nicks & tricks below to help you read, graph and solve any function!

- (i) Real Life
- (ii) Graphing Functions
- (iii) Functions Equations
- (iv) Function Theory

(i) REAL LIFE

Think of any function just like cooking in an oven. You put something into the oven and something else comes out.

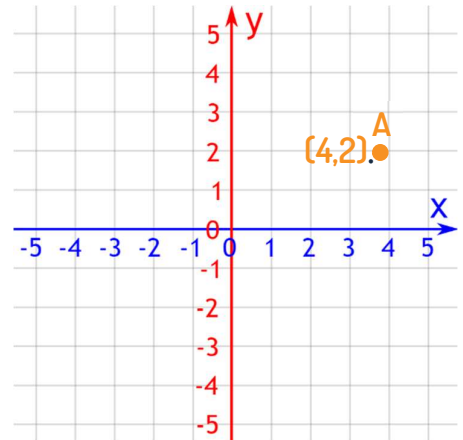


If Justin Bieber is cooking, he could put some **cake batter** into an oven and out comes a **cake**. Whereas if he put **potatoes** into the oven, out comes **chips**. The exact same thing with functions! You put **something in (x-value)** and you get **something out (y-value)**

(ii) GRAPHING FUNCTIONS

In order to graph a function, we need to be able to read graphs and co-ordinates.

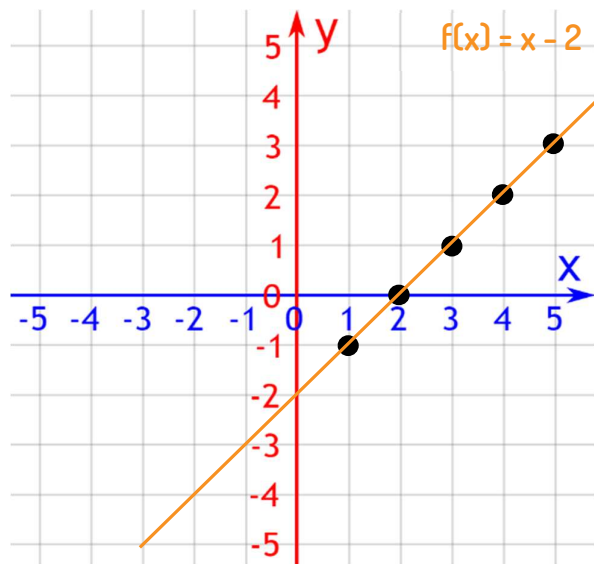
In the diagram on the right, the **x-axis** is shown in blue and the **y-axis** is shown in red. The **coordinates of A** are **(4,2)**. For coordinates, the **first number** is where the point is on the **x-axis** and the **second number** is where the point is on the **y-axis**.



To graph a function, pick 6 x-values and make the following table:

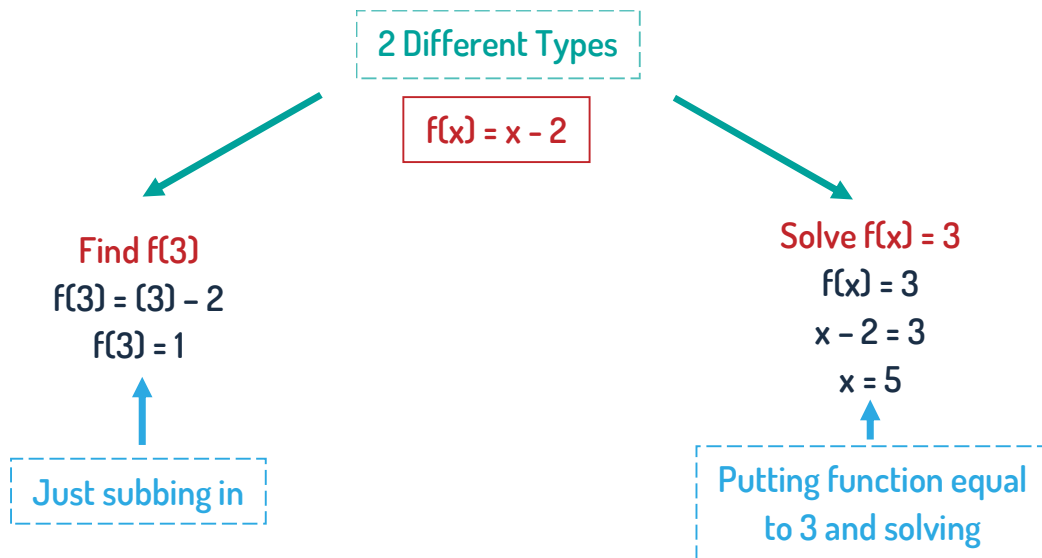
(In this example we are going to graph the function $f(x) = x - 2$)

x	$f(x) = x - 2$	y	(x,y)
1	$(1) - 2$	-1	(1,-1)
2	$(2) - 2$	0	(2,0)
3	$(3) - 2$	1	(3,1)
4	$(4) - 2$	2	(4,2)
5	$(5) - 2$	3	(5,3)
6	$(6) - 2$	4	(6,4)



Now take your 6 (x,y) points and plot them on the graph. Then just connect the dots and you're done!

(iii) FUNCTIONS EQUATIONS



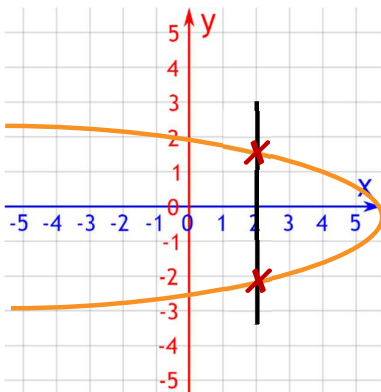
(iv) FUNCTION THEORY

Domain/Range

Domain = The **x-values** we're putting into our function

Range = The **y-values** we're getting from our function

Function Definition = A function is only allowed to have 1 y-value for every x-value!



On your exam you may be asked to check if a graph is a function. To do this, draw a straight vertical line anywhere on the graph. If you can draw a line anywhere that ends up hitting the function more than once, it's not a function!

← Not a function!

LUKE'S EXAM PREDICTIONS

- **Graphing Functions** has come up at least once every year for the past 5 years!
 - **Functions Equations** have come up 3 out of the past 5 years!
 - **Domain/Range** have come up 2 out of the past 5 years!
 - **Function Definition** has come up once out of the past 5 years!
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If you study this guide, you will be ready for **any** functions questions they have to throw at you! **Graphing functions** is an especially nice topic that comes up often so be sure to have that nailed for some **easy, free marks!**

*“The maths exam is about progress, **not** perfection!”*