6.4 Functions

Definition

Function: a relation between two values is classified as a function if each value within the domain corresponds to exactly one value in the range.
- You can test graphs through a Vertical Line Test. The line should only cross the graph at one point.

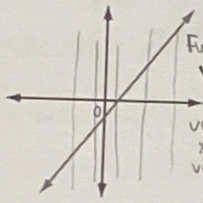
Function Notation

- a symbolic way of writing functions
- f(c) → f of c or f at c
  where "f" is your "y" representation
  and "c" is your "x" representation

Example 1 Determine Whether a Relation Is a Function

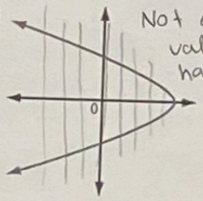
For each pair of relations, decide which relation is a function and which is not a function. Explain your choice.

a) A



Function VLT each value of x has 1 value of y.

B



Not a function. values of x, has multiple values of y

b) C

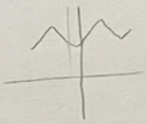
x	y
2	5
2	7
4	9
6	11

Not a function when x=2, y can be either 5 or 7

D

x	y
−3	3
−2	4
−1	3
0	4

Function each value of x has only one value of y.



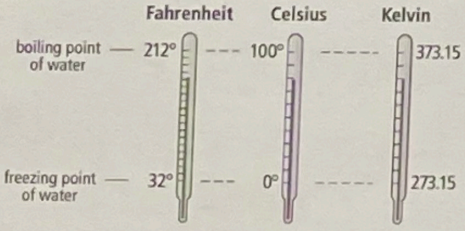
c) E {(1, 1), (2, 2), (3, 3), (4, 4)} x ∈ y

F {(1, 1), (1, 2), (1, 3), (1, 4)}

E Function. each value of x, has 1 value of y.

F Not a function. Each value of x has multiple values of y.

Example 2 Work With Function Notation



The function $F(C) = 1.8C + 32$ is used to convert a temperature in degrees Celsius (°C) to a temperature in degrees Fahrenheit (°F).

a) Determine $F(25)$. Explain your answer.

b) Determine C so that $F(C) = 100$. Explain your answer.

a) F(25) means C=25

F(25) = 1.8(25) + 32

F(25) = 45 + 32

F(25) = 77°F

b) F(C) = 100

100 = 1.8C + 32

68 = 1.8C

37.8°C = C

Example 3 Graphing Linear Functions

Skye has a cell phone plan for a monthly fee of $20 plus 15¢ for each text message to or from a number not on a list of favourites. Skye's monthly bill can be modelled by the relation $C = 0.15n + 20$, where C is the total charge, in dollars, and n is the number of additional text messages.

a) Write the relation in function notation.

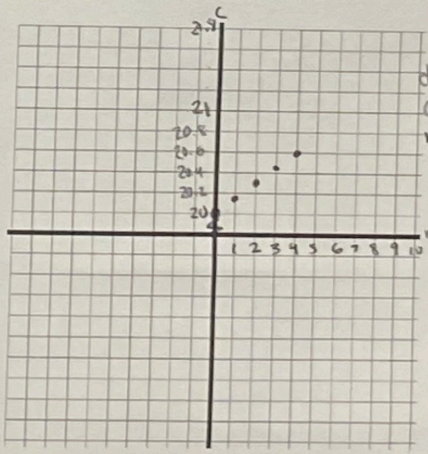
b) Make a table of values. Graph the function if Skye sends up to four additional text messages.

c) If Skye's cell phone bill for a certain month is $22.25, how many additional text message charges are there?

a) C(n) = 0.15n + 20

b)

n (number of messages)	0	1	2	3	4
Cost	20	20.15	20.30	20.45	20.60



Not connecting dots as you cannot send/recieve half a message - discrete

c) 22.25

C(n) = 0.15n + 20

C(n) = 22.25

22.25 = 0.15n + 20

−20 −20

2.25 = 0.15n

0.15 0.15

15 = n

She sent/recieved 15 messages