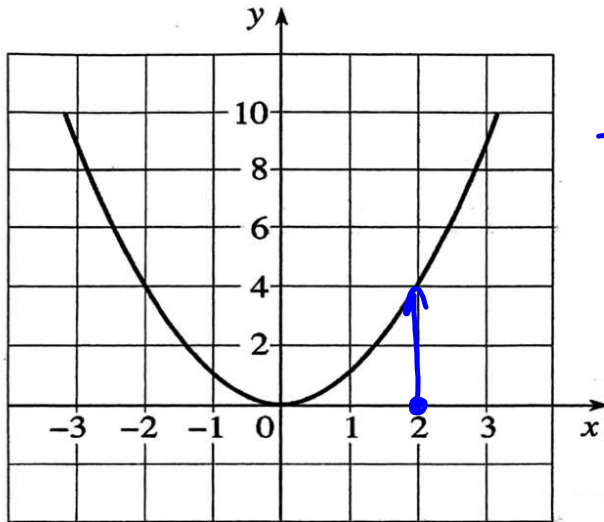


Introduction to Functions Reading Graphs

When asked to find a value on a graph, and show work – use a highlighter.

Ex: Find $f(2)$ on the graph below.

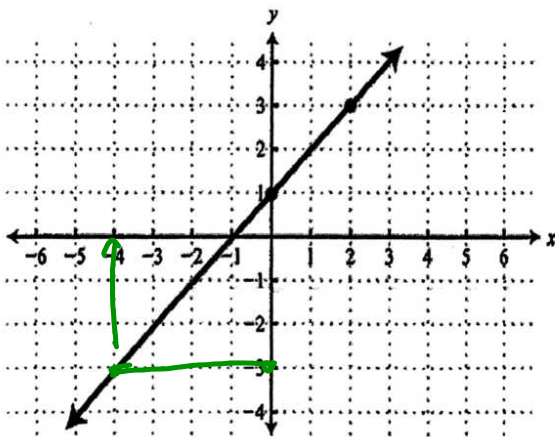
When asked to find $f(2)$ you must find when $x = 2$, and show that at that point $y = 4$



$$f(2) = 4$$

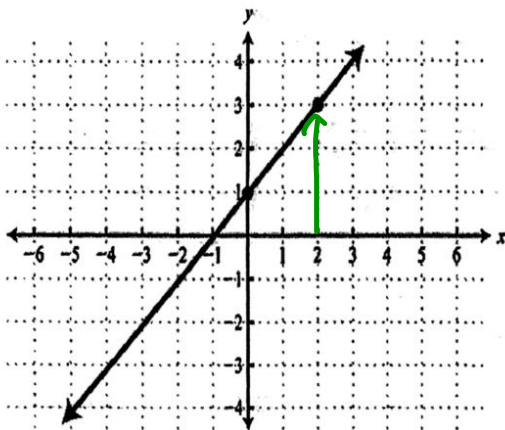
Ex 2: What is x when $f(x) = -3$ on the graph below?

When asked to find the value of x when $y = -3$, show that $x = -4$



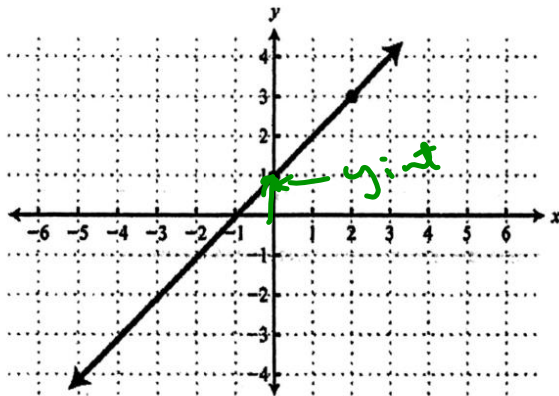
$$f(-4) = -3$$

Ex 3: Find $f(2)$.



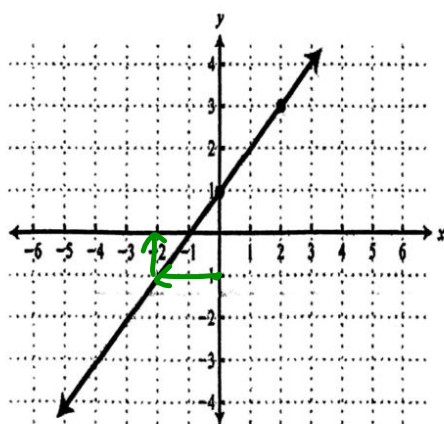
$$f(2) = 3$$

Ex 4: Find $f(0)$.



$$f(0) = 1$$

Ex 5: Find $f(x) = -1$



$$x = ? \quad y = -1$$

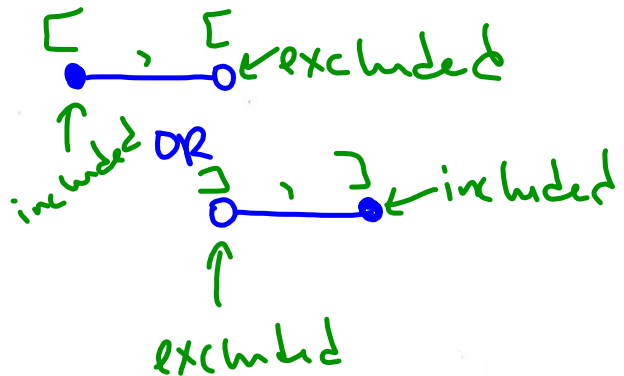
$$f(-2) = -1$$

$$\underline{\underline{x = -2}}$$

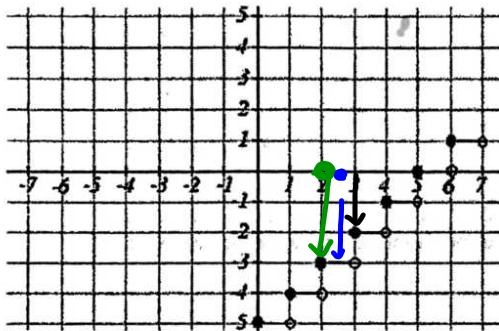
Reading a Step Function Graph

-You read it the same way you read regular graphs

-you choose the solid dot over the open dot

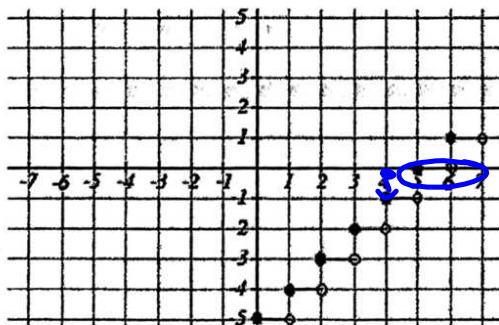


Ex: When $x = 2$, what is the value of y ?



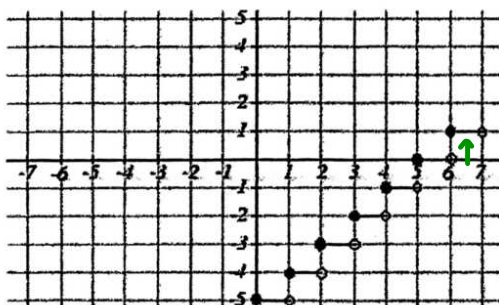
$f(2) = -3$
 $f(2.5) = -3$
 $f(3) = -2$

Ex2: Find $f(4)$.



$f(4) = -1$
 when $y = 0$, $x = ?$
 answer as an interval:
 $[5, 6[$

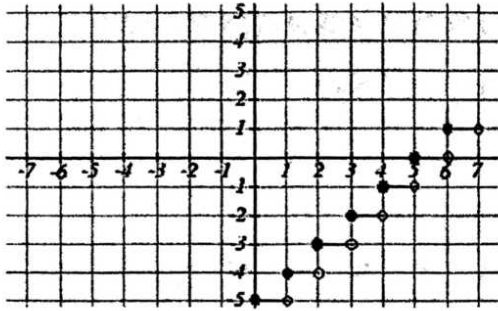
Ex 3: When $x = 6.5$, what is the value of y ?



$f(6.5) = 1$

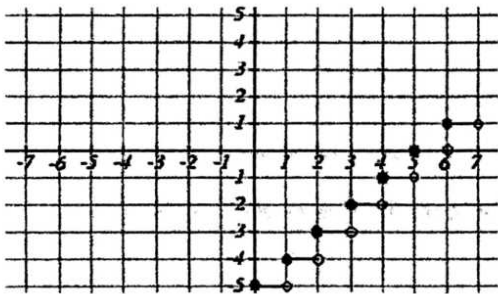
When you are given the value of y and asked to find x , you need to give your answer in an interval notation.

Ex: When $y = 1$, find the values for x .



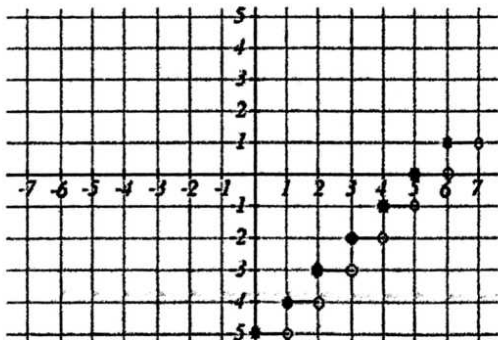
$y = 1$
 $x \in [1, 7[$
↑ subset (belongs to)

Ex 2: When $y = 0$, what are the values for x ?



$x \in [5, 6[$

Ex 3: When $y = -4$, find x .



$x \in [1, 2[$

Step Function

- A function which increases or decreases by a fixed amount according to certain increments
- The graph looks like a series of 'steps'

Ex 1: For every \$50 that you spend at a grocery store, you get one item for free.

Increments of 50 Increases by 1 item.

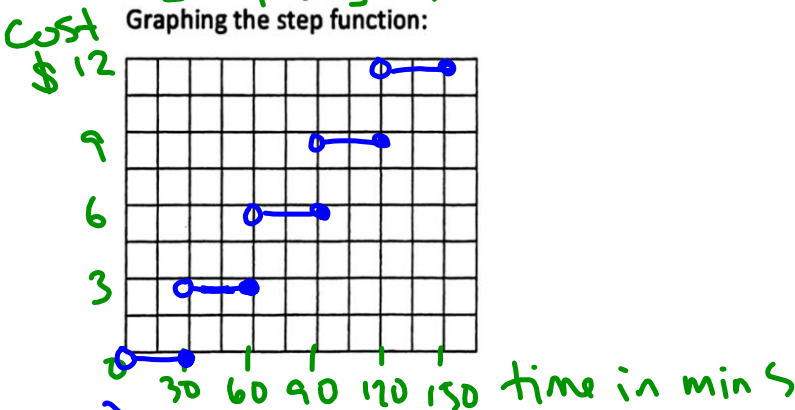
\$ Spent	# of Free Items
[0, 50[0
[50, 100[1
[100, 150[2
[150, 200[3
[200, 250[4

Ex 2: A parking garage is free for the first 30 minutes. Then you pay \$3 per 30 minutes after that.

Increment = 30 Increase = 3\$

Time in mins	\$ cost
[0, 30]	0
(30, 60]	3
(60, 90]	6
(90, 120]	9
(120, 150]	12
(150, 180]	15

Graphing the step function:



- How much would it cost for 2 hours?
- If you paid \$15, how long were you parked in the garage?

a) 2 hours = 120 mins = 9\$

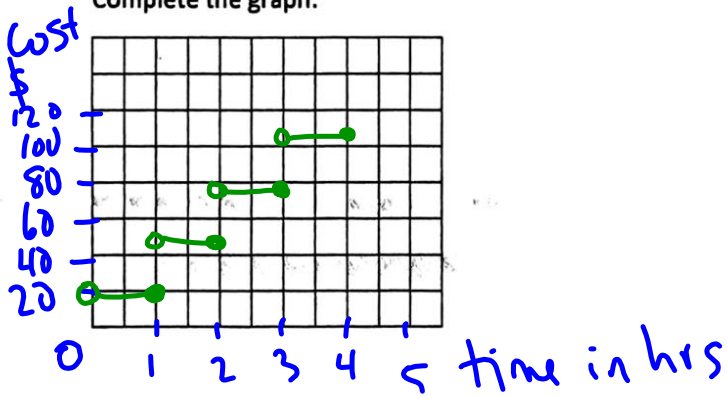
b) By extending the Table of Values
OR by logic \$15 = [150, 180] mins

Ex 3: An electrician charges \$20 to come to your home for the first hour, then \$30 for every subsequent hour or part of an hour.

Complete the table:

time in hrs	Cost (\$)
$]0, 1]$	20
$]1, 2]$	50
$]2, 3]$	80
$]3, 4]$	110

Complete the graph:



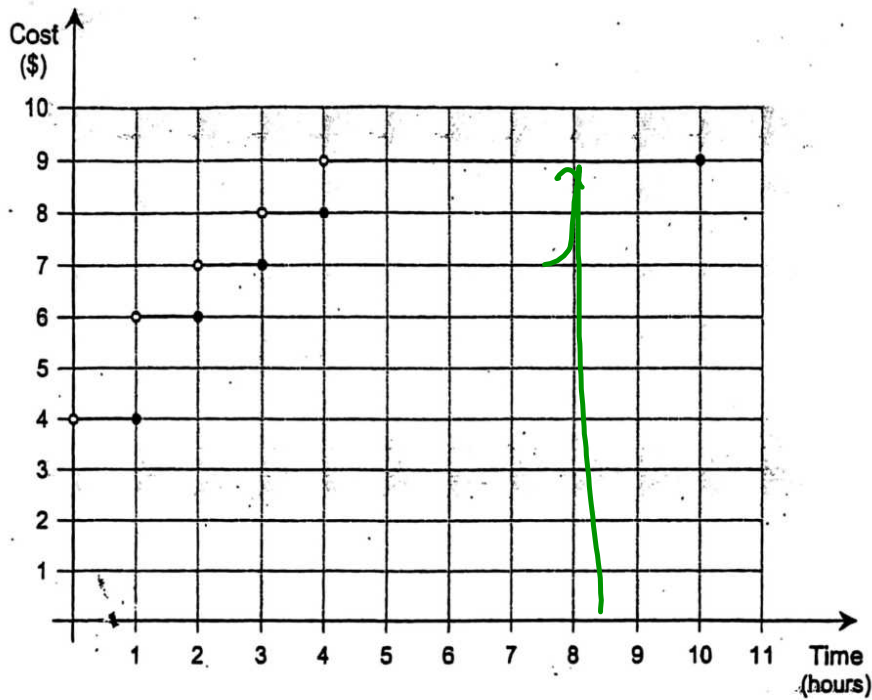
How much will the electrician charge for an hour and a half?

\$50

How long did he work if it cost you \$80?

$x \in]2, 3]$

A downtown Montréal parking lot is open 10 hours a day. The following graph shows the amount it costs, in dollars, to park a car on this lot in relation to the time, in hours, it remains parked there.



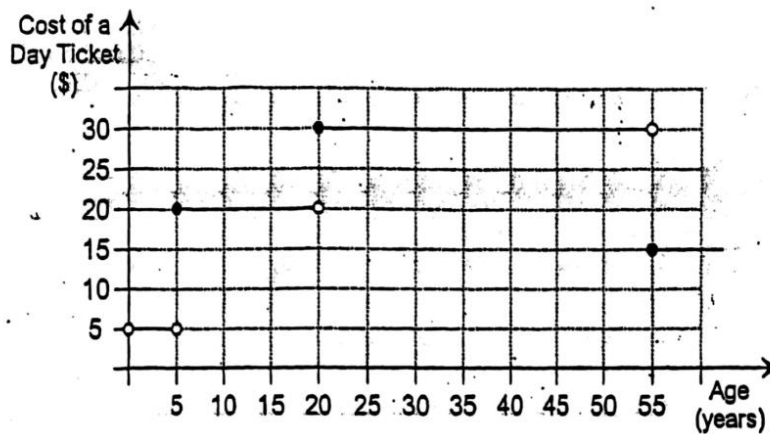
Consider the following four statements.

- I. To park a car on this lot for 30 minutes, it costs \$2. F
- II. To park a car on this lot for 1 hour and 1 minute, it costs \$6. T
- III. To park a car on this lot for 3 hours, it costs \$8. F
- IV. To park a car on this lot for 8 hours and 15 minutes, it costs \$9. T

Which of these statements are true?

- A) I and IV only
- B) I, III and IV only
- C) II and III only
- D) II and IV only

The following graph shows the cost of a day ticket to an amusement park according to a person's age.



Helen and Dennis will spend a day at this park with their two children. Helen, Dennis and their children are 52, 55, 15 and 20 years of age, respectively.

What will be the total cost of the day tickets for this family of 4?

$$\begin{aligned}
 15 &= 20\$ \\
 20 &= 30\$ \\
 55 &= 15\$ \\
 52 &= 30\$ \\
 \text{Total} &= 95\$
 \end{aligned}$$