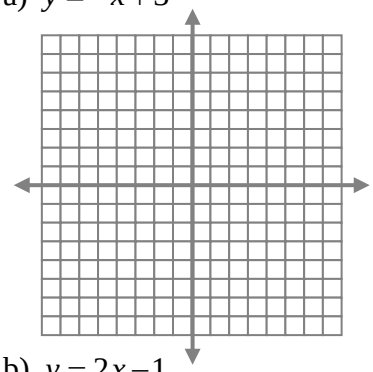
6.3 Graphing Linear Relations

Prescribed Learning Outcomes (PLO'S):

- Match given equations of linear relations with their corresponding graphs
- Graph a given linear relation, including horizontal and vertical lines
- Solve problems by graphing a linear relation and analysing the graph

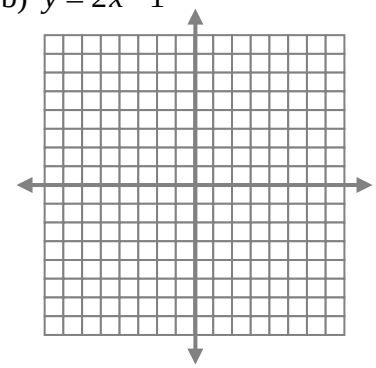
Example 1: Graph each of the following equations using a table of values.

a) $y = -x + 3$

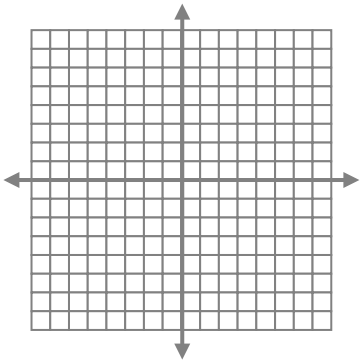


x	y
-2	
-1	
0	
1	
2	

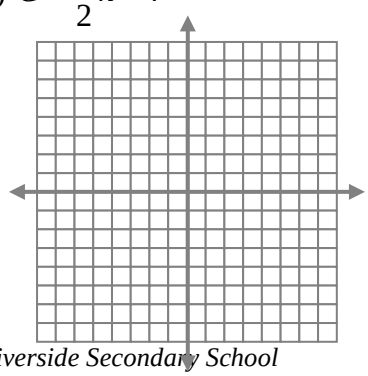
b) $y = 2x - 1$



c) $d = -3t + 2$

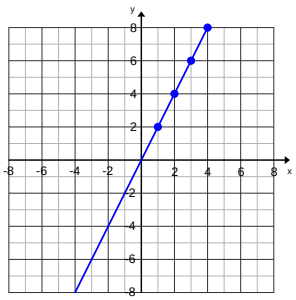


d) $C = \frac{1}{2}n - 4$

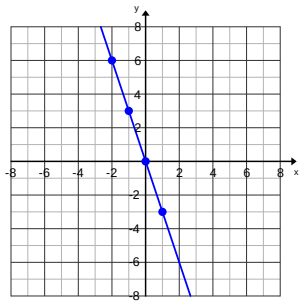


Example 2: Write an equation for the relation shown in the graphs below: (hint: Make a table of values)

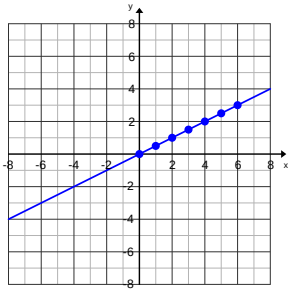
a)



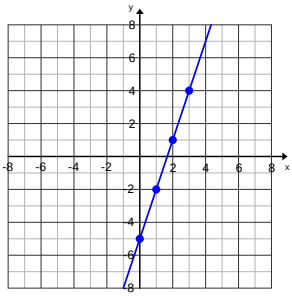
b)



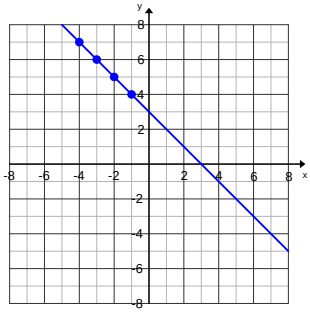
c)



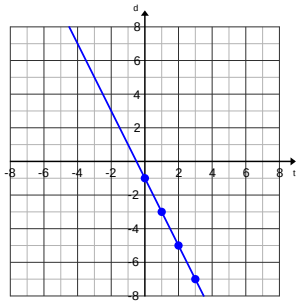
d)



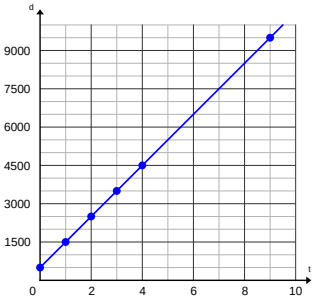
e)



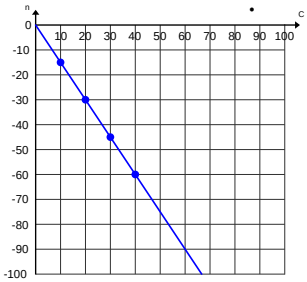
f)



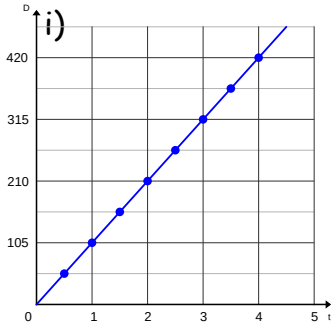
g)



h)



i)



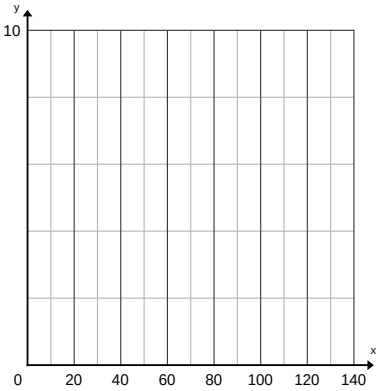
Example 3:

a) Draw a graph to represent the table of values . What do you notice?

b) The graph for table 1 could represent the distance between a pedestrian and a traffic light while they are waiting for a traffic light to change. What else could it represent?

Table 1

Time, *t* (s)	Distance, *d* (m)
0	6
30	6
60	6
90	6
120	6

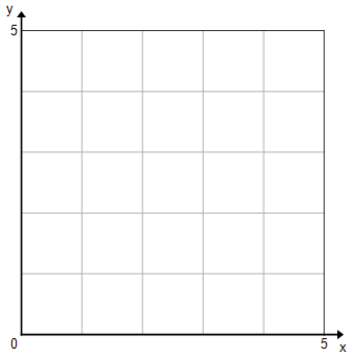


c) The equation to relate the distance to the time in the previous table and graph is …

Example 4:

Draw a graph to represent the table of values. What do you notice?

x	y
1	1
1	2
1	3
1	4

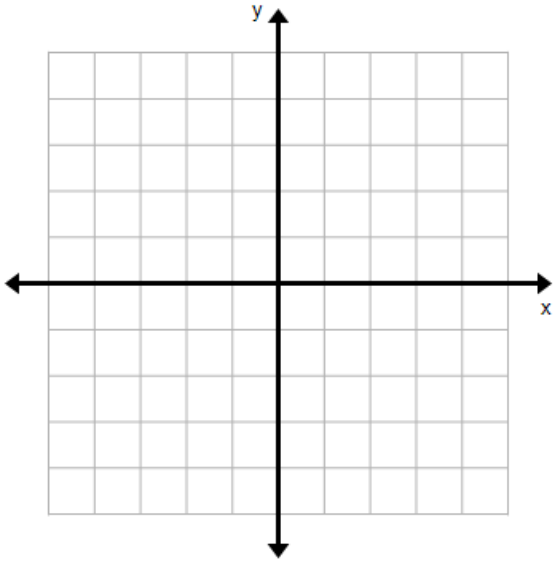


a) Does it make sense to describe a model for this situation? Why or why not?

b) What is the equation for the table and graph?

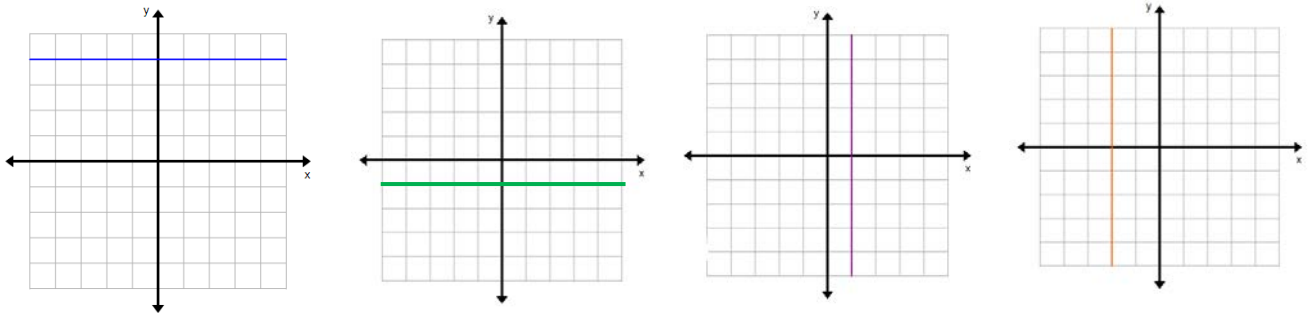
Example 5: On the grid below graph all the following lines and label them:

1. x = 1
2. y = 1
3. x = 4
4. y = 3
5. x = −1
6. y = 0
7. x = 0
8. y = −2
9. x = −3



What are the special names for # 6 and # 7 ?

Example 6: Write the equations for the following graphs:

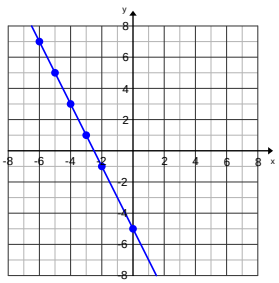


Example 7: Match the graphs and tables with the equations below.

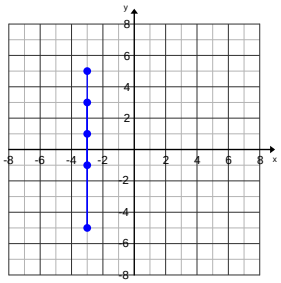
a)

x	y
-2	4
-1	4.5
0	5
1	5.5
2	6

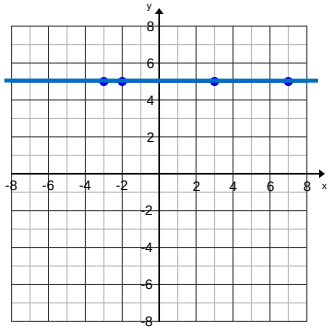
b)



c)



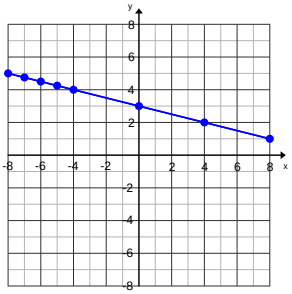
e)



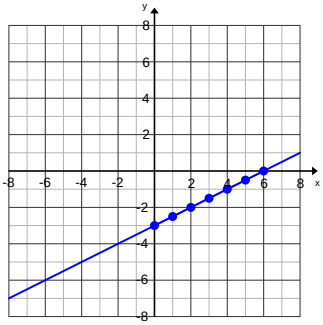
f)

x	y
-1	-8
0	-5
1	-2
2	1
3	4

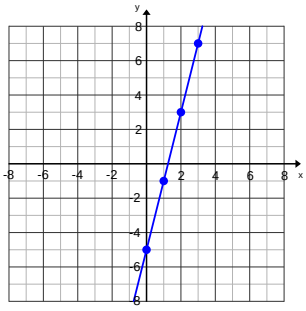
g)



h)



i)



j)

x	y
8	-2
9	-2.25
10	-2.5
11	-2.75
12	-3

i) $y = \frac{1}{2}x - 3$ ii) $y = 4x - 5$ iii) $y = 5$ iv) $x = -3$ v) $y = -\frac{x}{4}$

vi) $y = -\frac{1}{4}x + 3$ vii) $y = \frac{1}{2}x + 5$ viii) $y = 3x - 5$ ix) $y = -2x - 5$