Exercise 9.1

1- ***Represent the points on the graph whose co-ordinates are given below.***

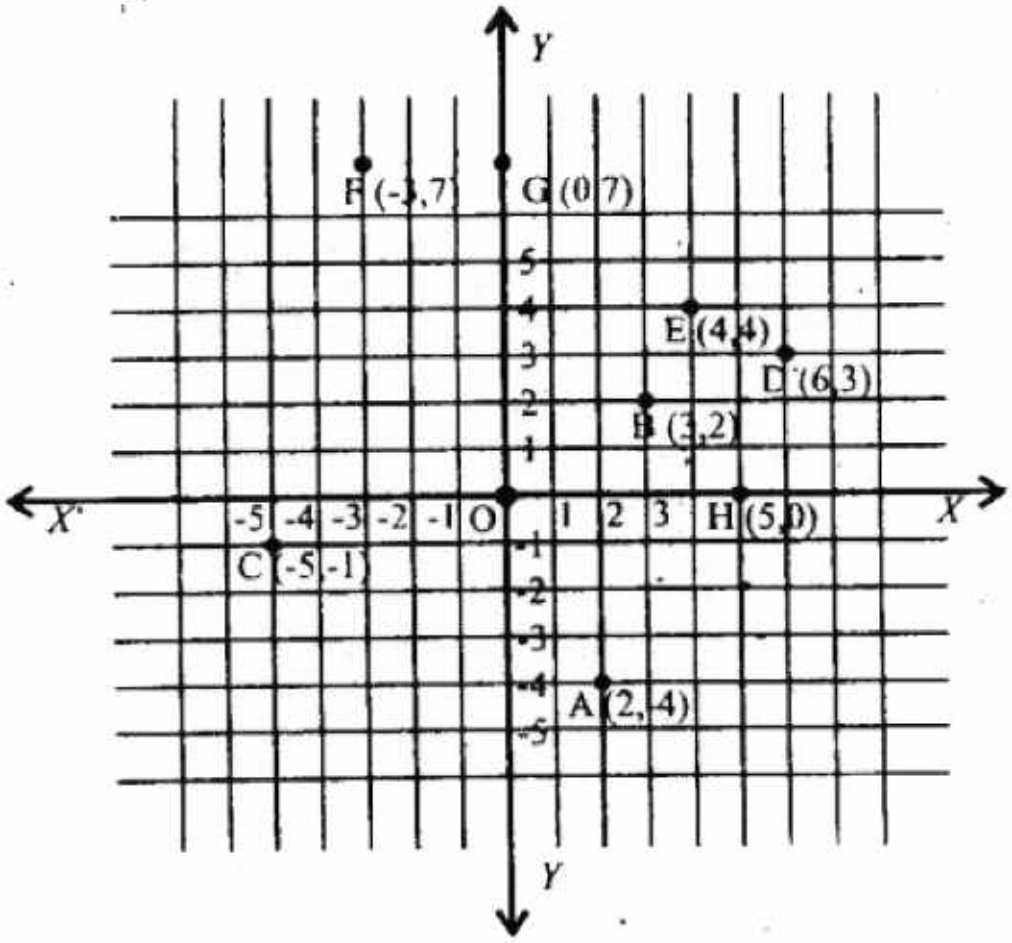
(i) $A(2,-4)$ (ii) $B(3,2)$

(iii) $C(-5,-1)$ (iv) $D(6,3)$

(v) $E(4,4)$ (vi) $F(-3,7)$

(vii) $G(0,7)$ (viii) $H(5,0)$

Solution:-



2- ***Write down the co-ordinates of:***

(i) Origin

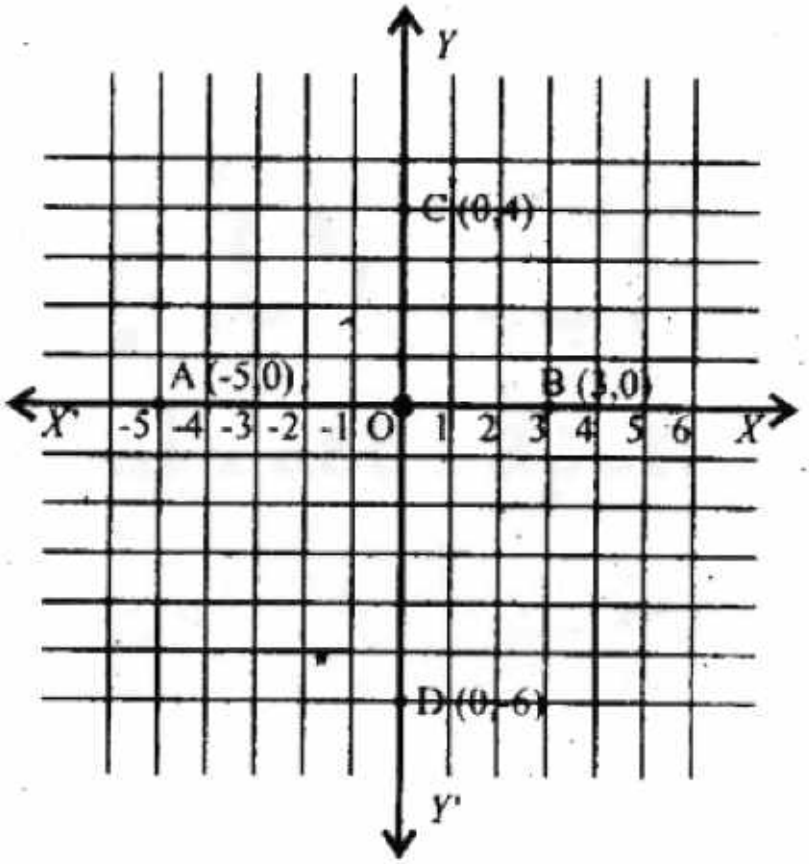
(ii) A point lying on the left hand side of x-axis and at a distance of 5 units from the origin.

(iii) A point lying to the right hand side of the origin on

x-axis at a distance of 3 units from the origin.

(iv) A point lying above x-axis and on y-axis at a distance of 4 units.

(v) A point lying below x-axis and on y-axis at a distance of 6 units.



(i) (0, 0) (ii) (-5, 0) (iii) (3, 0)

(iv) (0,4) (v) (0, -6)

3- ***Draw the figures with help of the following points on the graph paper.***

(i) *A(7,2), B(−6,−3), C(5,3)*

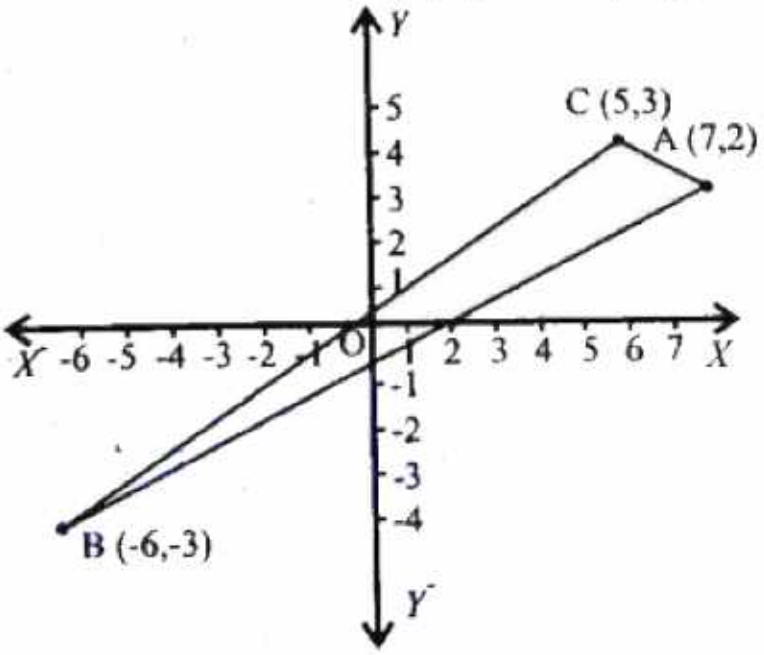
(ii) *A(0,−7), B(3,−2), C(4,0) D(5,6), E(7,8)*

(iii) *A(4,0), B(0,4), C(−4,0), D(0,−4)*

(iv) $A(10,6)$, $B(-10,6)$, $C(-10,-6)$, $D(10,-6)$

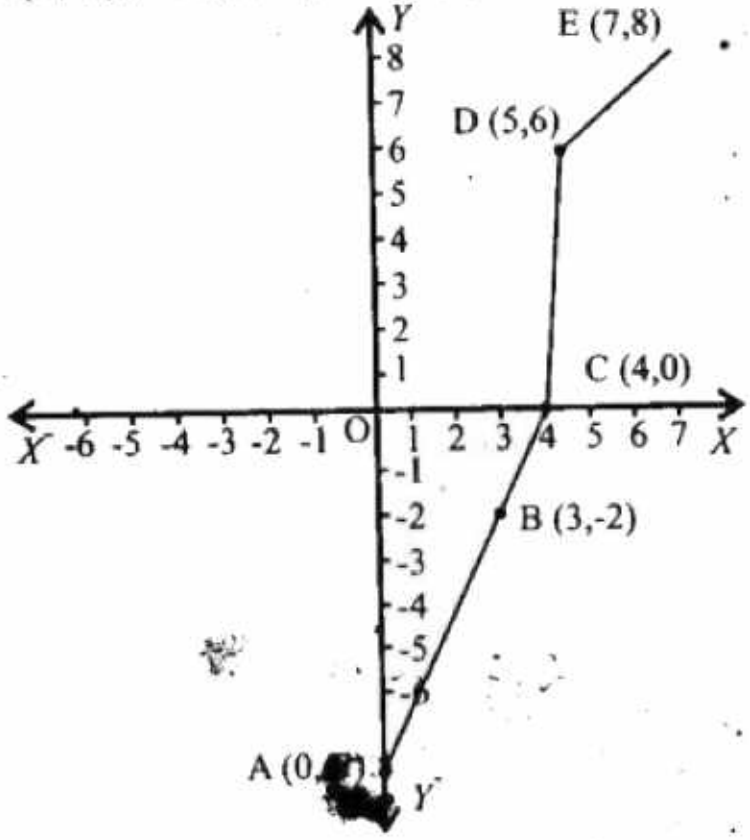
Solution:3(i)

A(7,2), B(-6,-3), C(5,3)



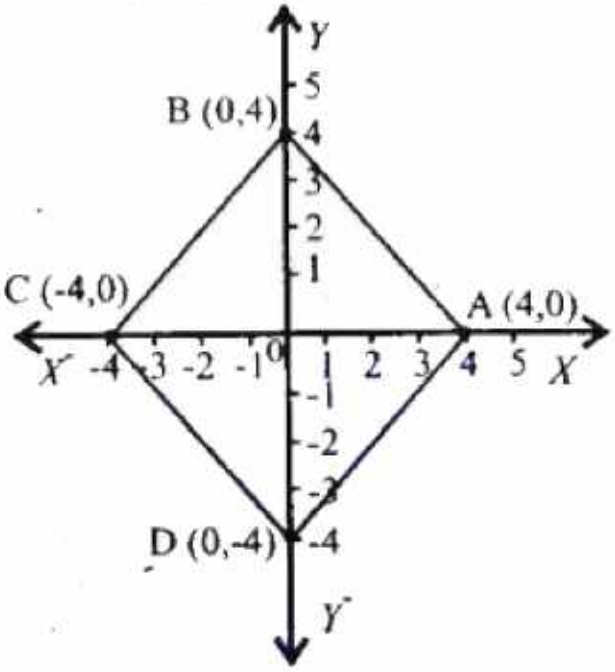
Solution:3(ii)

A(0,-7), B(3,-2), C(4,0), D(5,6), E(7,8) :



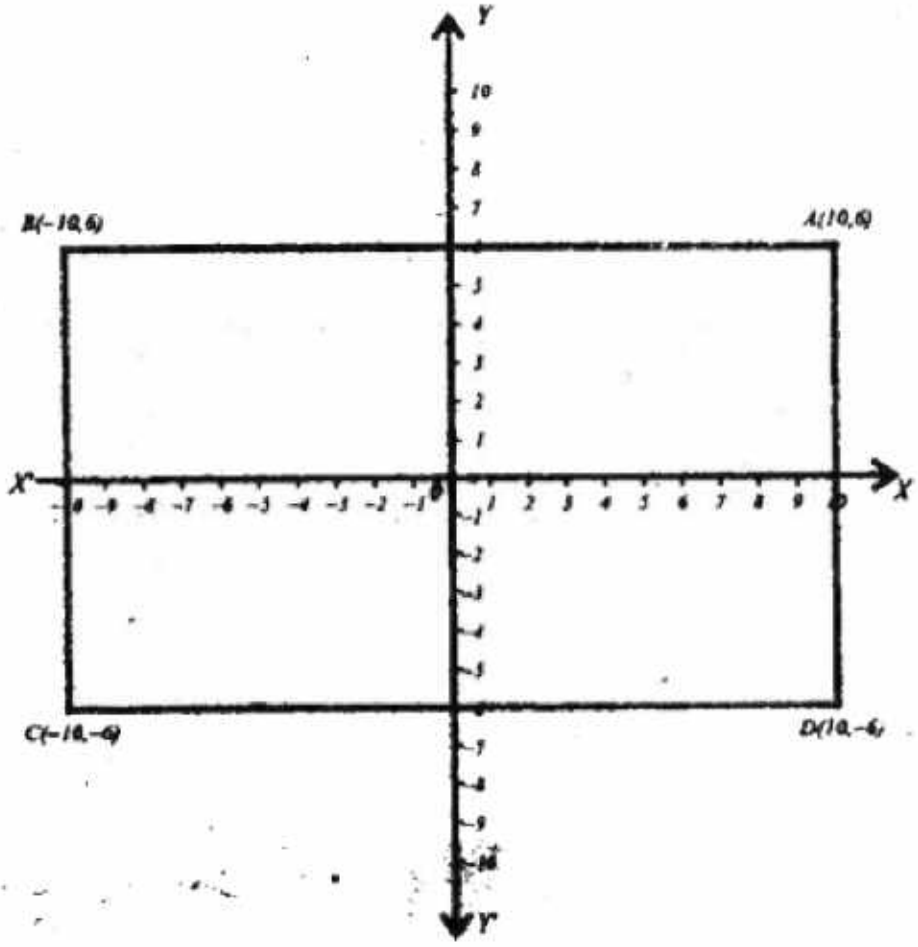
Solution:3(iii)

A(4,0), B(0,4), C(-4,0), D(0,-4) :



Solution:3(iv)

A(10,6), B(-10,6), C(-10,-6), D(10,-6) :



Exercise 9.2

Draw the graph of:

1. $y = 3x$ **2.** $y = x + 7$ **3.** $y = 2x - 3$

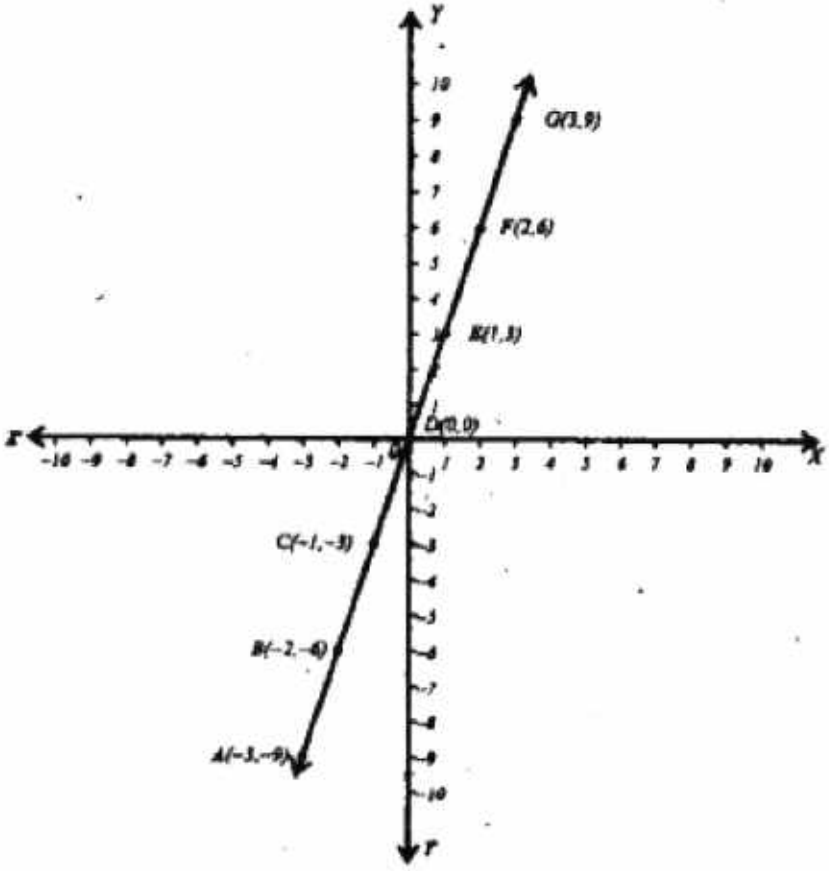
4. $y = 4x + 1$ **5.** $y = -\frac{x}{2} - \frac{3}{2}$ **6.** $y = x - 1$

7. $y = 2x - 3$ **8.** $y = 3x + 5$ **9.** $y = \frac{x}{2}$

Solution: (i) .y = 3x

Put x = 0 in equaion (i) then y = 0. The graph shows first point is (0, 0). Now we will find different values putting $x = \pm 1, \pm 2, \pm 3$ *from the table.*

x =	-3	-2	-1	0	1	2	3
y =	-9	-6	-3	0	3	6	9



Solution: $y = x + 7$

Put $x = 0$ in equation. We will find ordered pair (0, 7).

Now put $x = 1, 2, 3$ and we will find values of y.

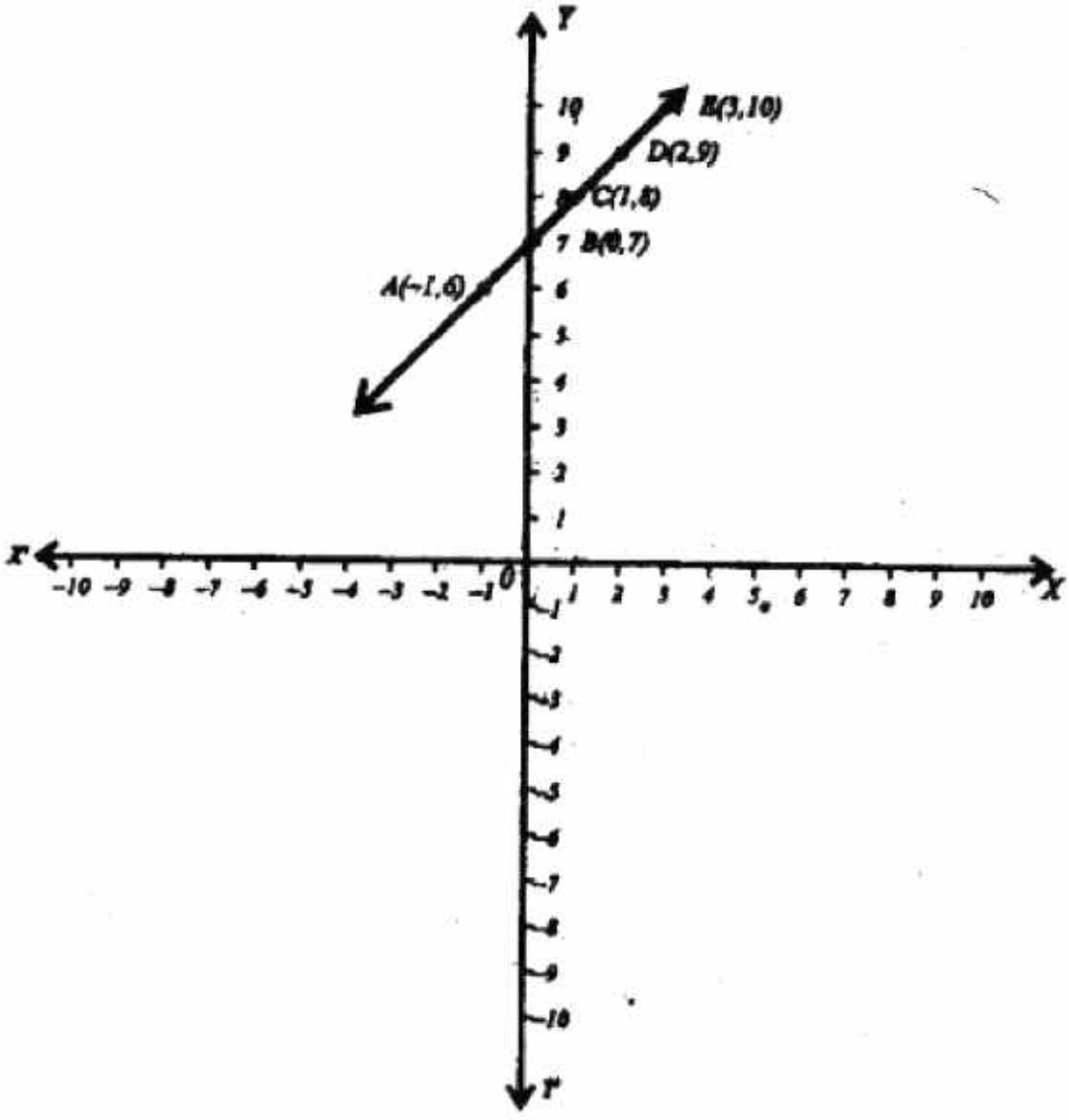
$y = x + 7$ $\quad$ $y = x + 7$ $\quad$ $y = x + 7$

$= 1 + 7$ $\quad$ $= 2 + 7$ $\quad$ $= 3 + 7$

$= 8$ $\quad$ $= 9$ $\quad$ $= 10$

Table of values of x and y is as under.

$x =$	0	1	2	3	-1
$y =$	7	8	9	10	6



Solution: $y = 2x - 3$

First we will put $x = 0$ in equation

$y = 2(0) - 3$

$y = (0, -3)$

Similarly we will get values of y putting values of x as

$x = -2, -1, 1, 2, 3$

$y = 2x - 3$
$= 2(-2) - 3$
$= -4 - 3$
$= -7$

$y = 2x - 3$
$= 2(-1) - 3$
$= -2 - 3$
$= -5$

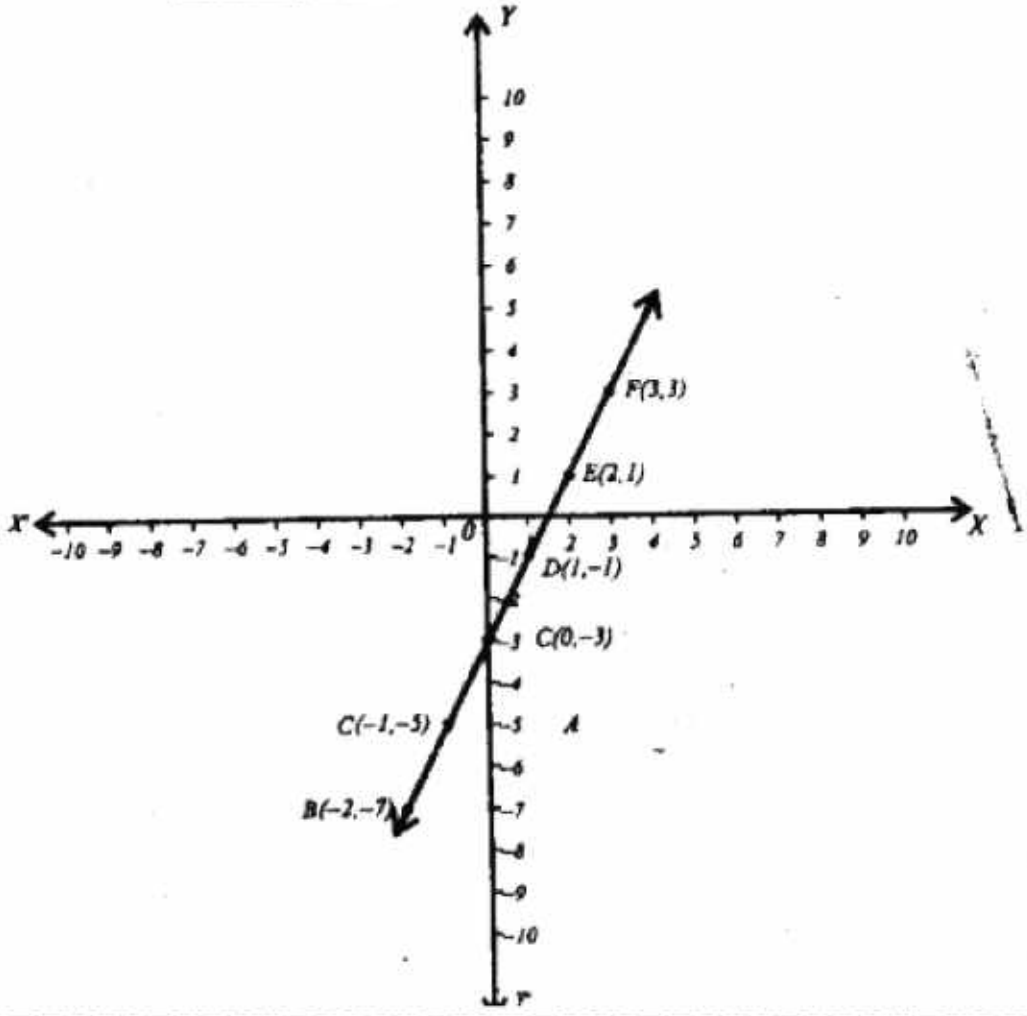
$y = 2x - 3$
$= 2(1) - 3$
$= 2 - 3$
$= -1$

$y = 2x - 3$
$= 2(2) - 3$
$= 4 - 3$
$= 1$

$y = 2x - 3$
$= 2(3) - 3$
$= 6 - 3$
$= 3$

Table of values of x, y is as under.

$x =$	0	-2	-1	1	2	3
$y =$	-3	-7	-5	-1	1	3



Solution: $y = 4x + 1$

Putting values of $x = 0$

$y = 4(0) + 1$

$y = 0 + 1$

We will get orderd pair (0, 1)

$y = 4x + 1$
$= 4(-2) + 1$
$= -8 + 1$
$= -7$

$y = 4x + 1$
$= 4(-1) + 1$
$= -4 + 1$
$= -3$

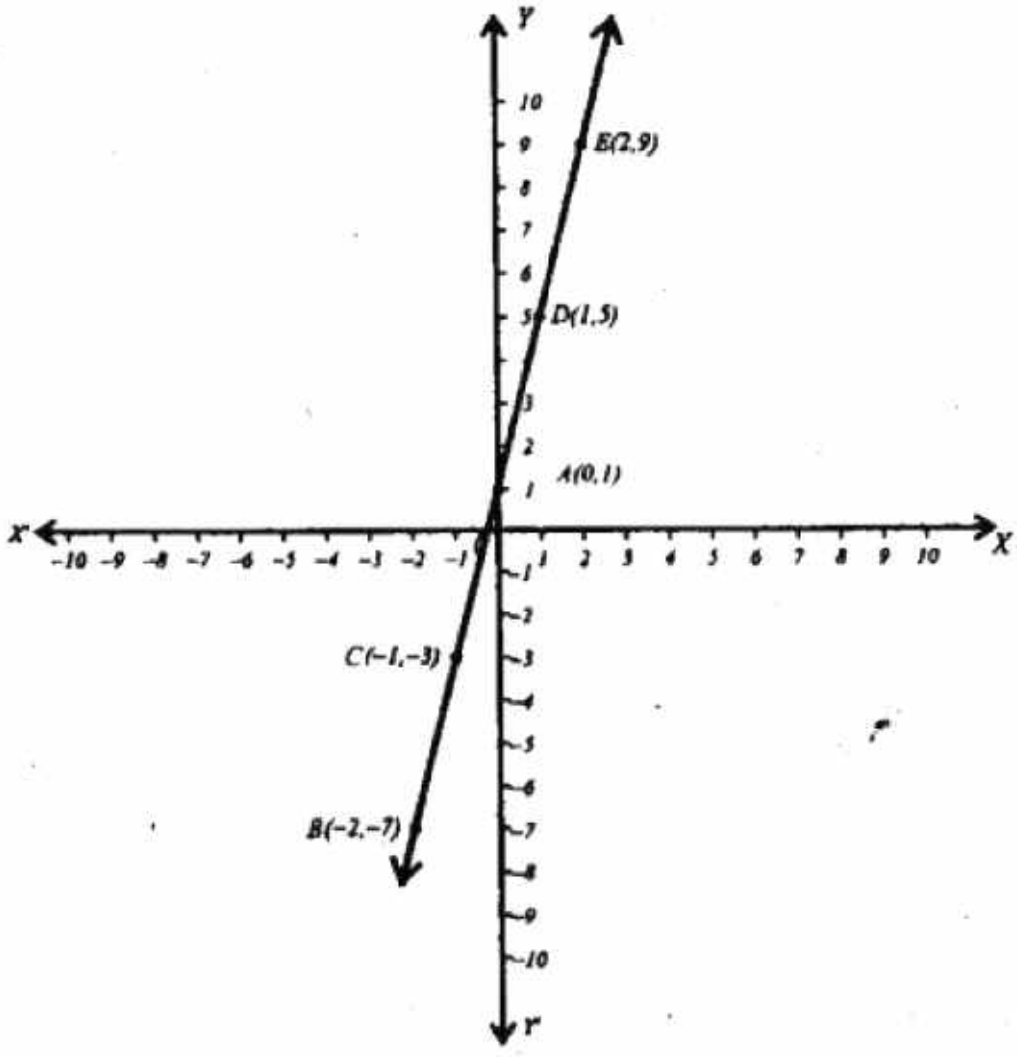
$y = 4x\ 1$
$= 4(1) + 1$
$= 4 + 1$
$= 5$

$y = 4x + 1$
$= 4\ (2) + 1$
$= 8 + 1$
$= 9$

$y = 4x + 1$
$= 4\ (3) + 1$
$= 12 + 1$
$= 13$

Now put values of x = -2, -1, 1, 2, 3 in equation. Table of values of x and y is as under.

$x =$	0	-2	-1	1	2	3
$y =$	1	-7	-3	5	9	13



Solution:

$$y = -\frac{x}{2} - \frac{3}{2}$$

$$= \frac{-x-3}{2}$$

Putting values of $x = -1, -3, 1, -13$ in equation.

$$y = \frac{-x-3}{2} \qquad y = \frac{-x-3}{2} \qquad y = \frac{-x-3}{2}$$

$$= \frac{-(-1)-3}{2} \qquad = \frac{-(-3)-3}{2} \qquad = \frac{-1-3}{2}$$

$$= \frac{1-3}{2}$$

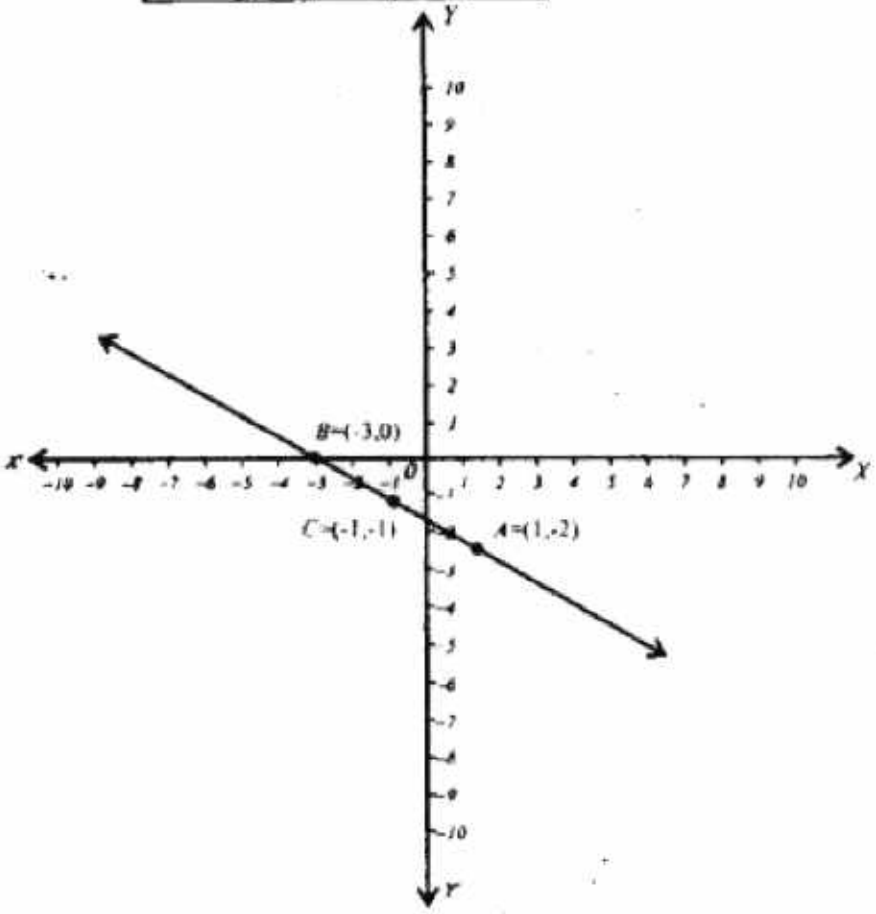
$$= \frac{-2}{2} = -1 \qquad = \frac{3-3}{2} = 0 \qquad = \frac{-4}{2} = -2$$

$$y = \frac{-x-3}{2}$$

$$= \frac{-(-13)-3}{2} = \frac{13-3}{2} = \frac{10}{2} = 5$$

Table of values of x and y is as under.

$x =$	-1	-3	1	-13
$y =$	-1	0	-2	5



Solution: $y = x - 1$

Putting values of x = 0, -1, 2, 8 in equation.

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

$= 0 - 1$ $\quad$ $y = -1 - 1$ $\quad$ $= 1 - 1$

$= -1$ $\quad$ $= -2$ $\quad$ $= 0$

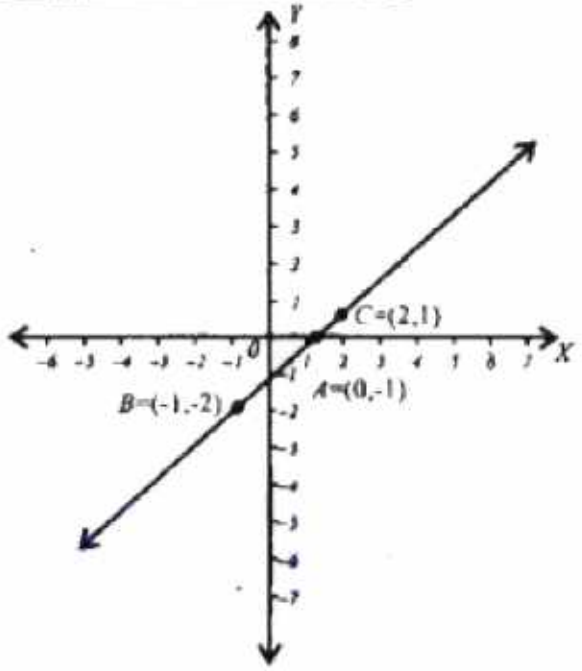
$y = x - 1$ $\quad$ $y = x - 1$

$= 2 - 1$ $\quad$ $= 8 - 1$

$= 1$ $\quad$ $= 7$

Table of values of x and y is as under.

$x =$	0	-1	1	2	8
$y =$	-1	-2	0	1	7



Solution: $y = 2x - 3$

Putting values of x = 0, -3, -2, -1, 2, 3 in equation.

$y = 2(0) - 3$

$= 0 - 3$

$= -3$

$y = 2(-3)-3$

$y = -6 -3$

$= -9$

$y = 2(-2)-3$

$= -4 -3$

$= -4 -3$

$y = 2(-1)-3$

$= -2 -3$

$= -5$

$y = 2(1)-3$

$= 2 -3$

$= -1$

$y = 2(2)-3$

$= -7$

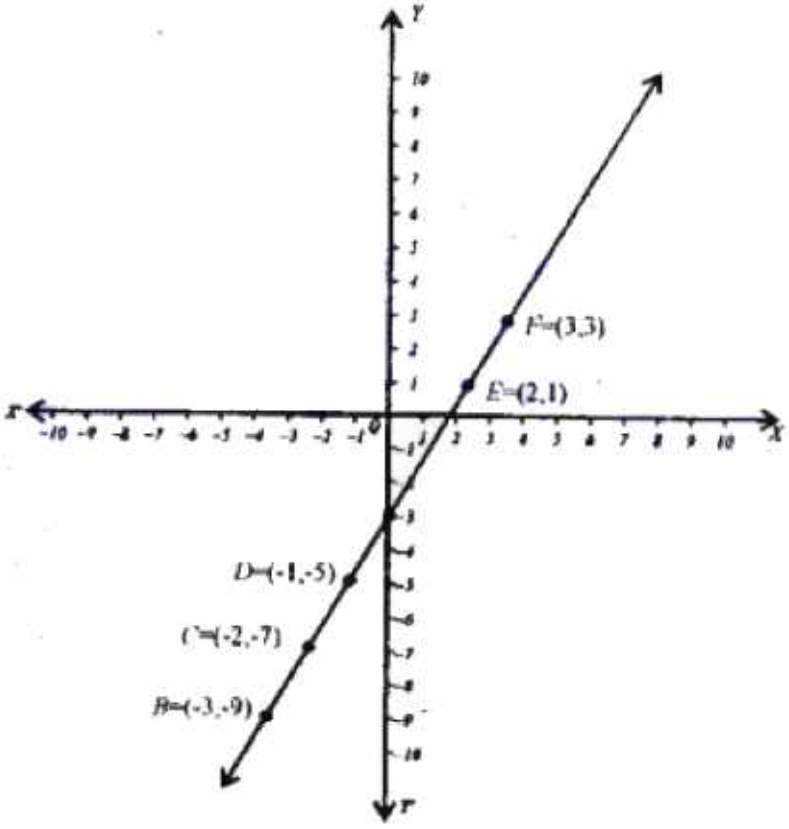
$= 1$

$y = 2(3)-3$

$= 6 - 3 = 3$

Table of values of x and y is as under.

$x =$	0	-3	-2	-1	1	2	3
$y =$	-3	-9	-7	-5	-1	1	3



Solution: $y = 3x + 5$

Putting values of x = 0, -1, -2, 1 in equation.

$y = 3x + 5$ $\quad$ $y = 3x + 5$ $\quad$ $y = 3x + 5$

$y = 3(0) + 5$ $\quad$ $y = 3(-1) + 5$ $\quad$ $y = 3(-2) + 5$

$= 0 + 5$ $\quad$ $= -3 + 5$ $\quad$ $= -6 + 5$

$= 5$ $\quad$ $= 2$ $\quad$ $= -1$

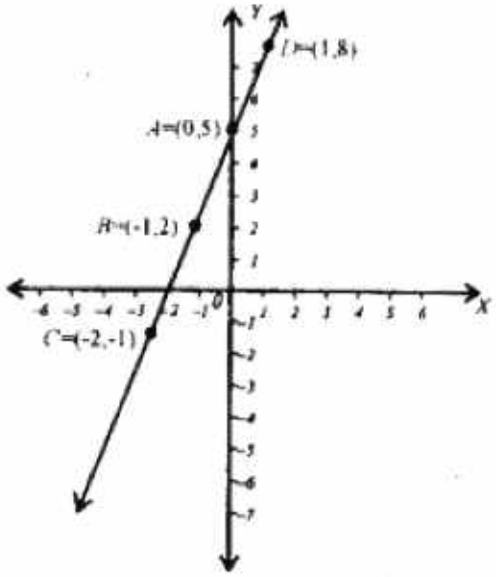
$y = 3x + 5$

$= 3(1) + 5$

$= 3 + 5 = 8$

Table of values of x and y is as under.

$x =$	0	-1	-2	1
$y =$	5	2	-1	8



Solution: $y = \frac{x}{2}$

Putting values of $x = 0, 4, 8, 8, 10, 12$ in equation.

$$y = \frac{x}{2} \qquad y = \frac{x}{2} \qquad y = \frac{x}{2} \qquad y = \frac{x}{2}$$

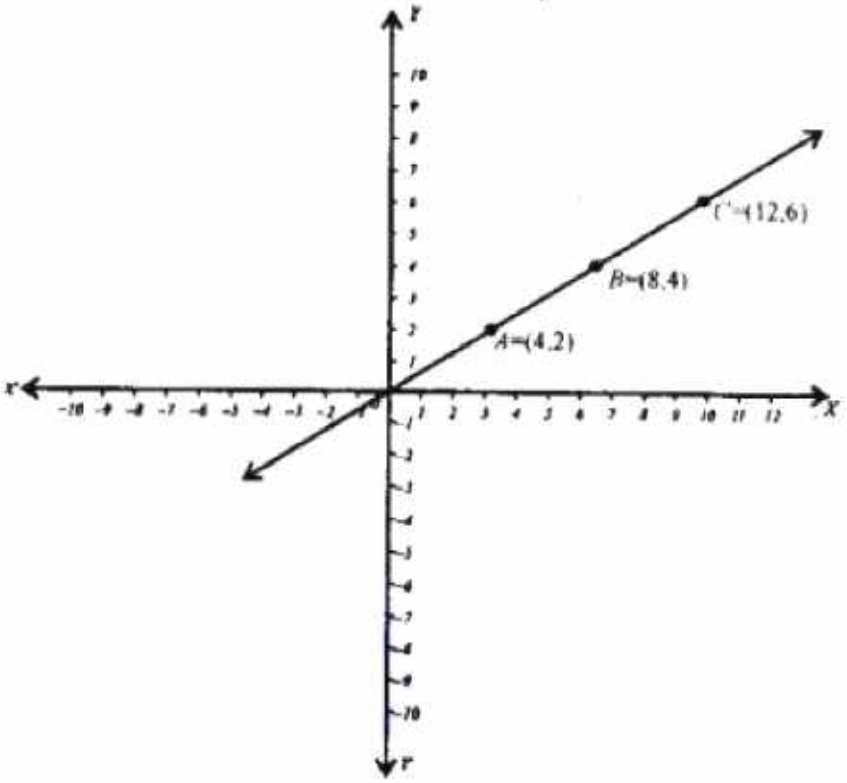
$$= \frac{0}{2} = 0 \qquad = \frac{4}{2} = 2 \qquad = \frac{8}{2} = 4 \qquad = \frac{10}{2} = 5$$

$$y = \frac{x}{2}$$

$$= \frac{12}{2} = 6$$

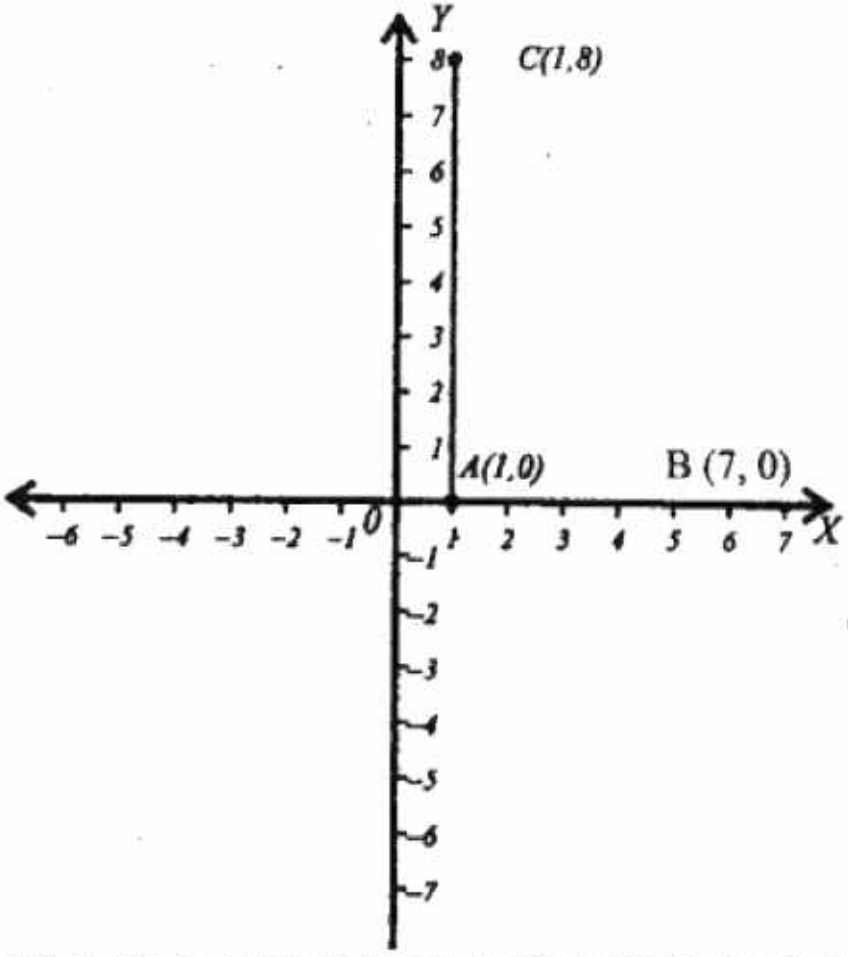
Table of values of x and y is as under.

$x =$	0	4	8	12	10	12



10- Draw the graph by plotting the points

A(1,0), B(7,0), C(1,8)



11- Draw the graph from the given tables.

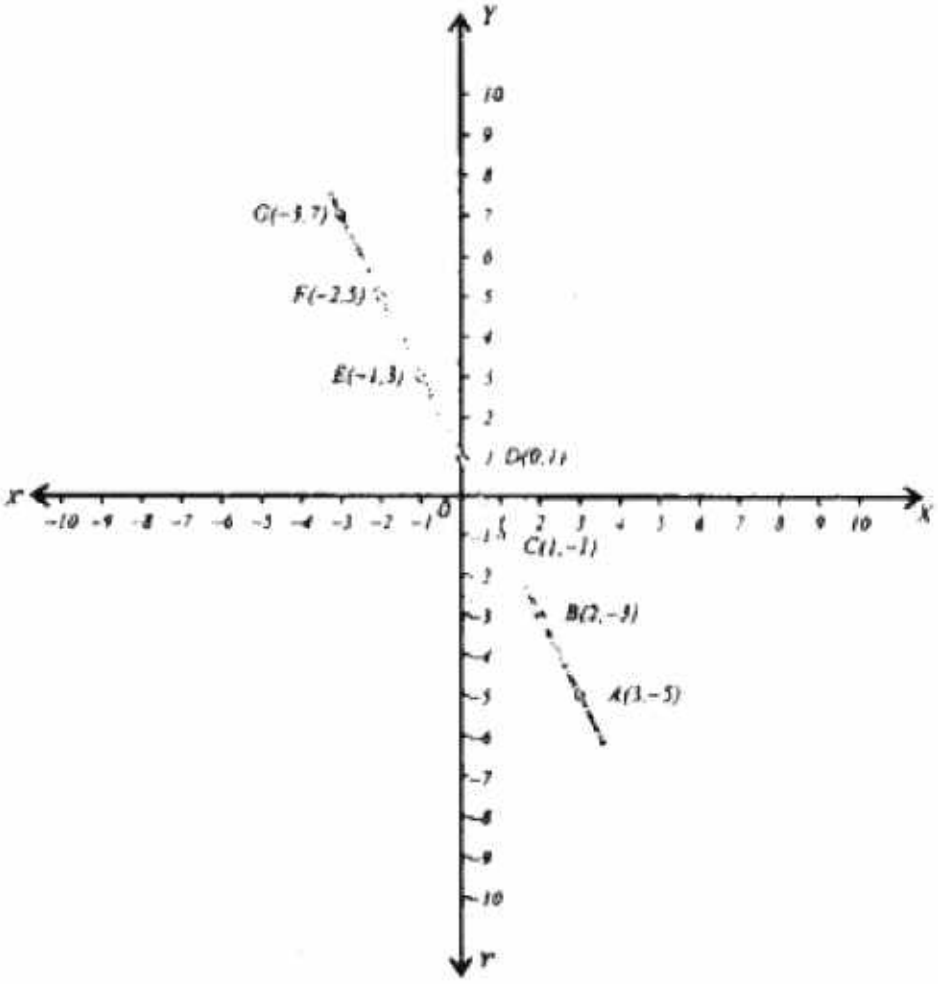
(i)

x	*3*	*2*	*1*	*0*	*- 1*	*- 2*	*- 3*
y	*- 5*	*- 3*	*- 1*	*1*	*3*	*5*	*7*

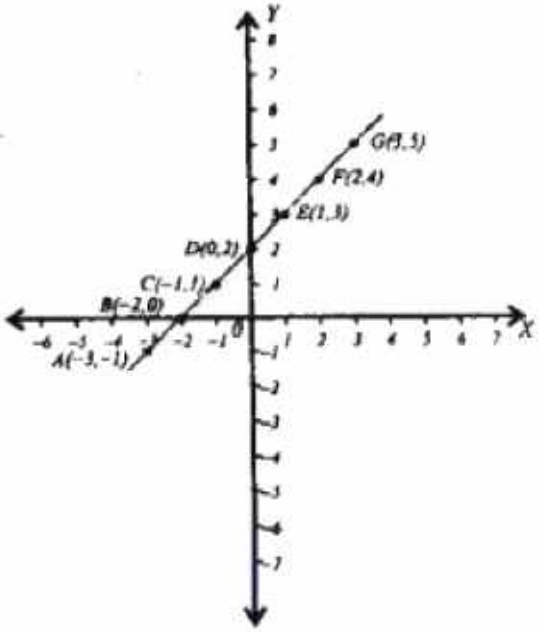
(ii)

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

Solution:

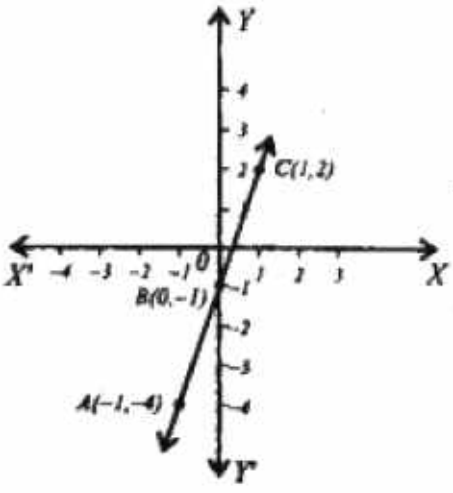


Solution:11(ii)



12- Identify thorugh the given graphs the domain and the range of a function.

Solution:



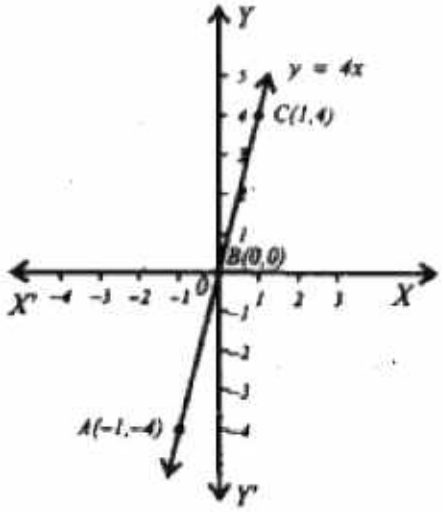
$$y = 3x - 1$$

$$f = \{(-1, -4), (0, -1), (1, 2)\}$$

$$\text{Dom } f = \{-1, 0, 1\}$$

$$\text{Range } f = \{-4, -1, 2\}$$

Solution:13



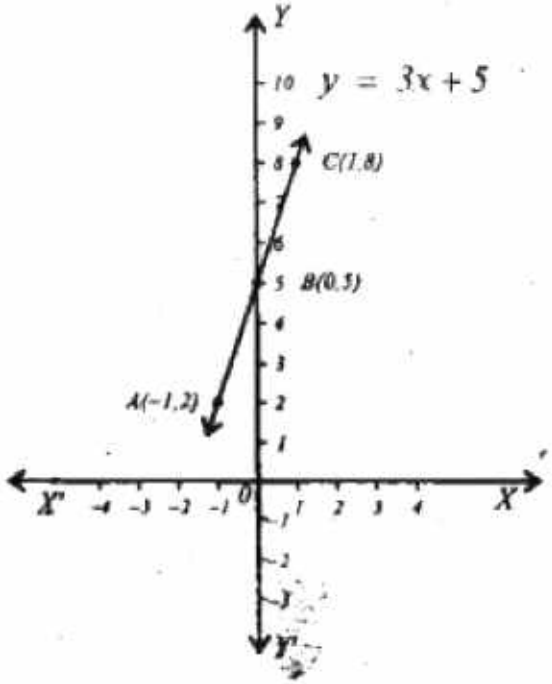
$$y = 4x$$

$$f = \{(-1, -4), (0, 0), (1, 4)\}$$

$$\text{Dom } f = \{-1, 0, 1\}$$

$$\text{Range } f = \{-4, 0, 4\}$$

Solution:14



$$f = \{(-1, 2), (0, 5), (1, 8)\}$$

$$\text{Dom } f = \{-1, 0, 1\}$$

$$\text{Range } f = \{2, 5, 8\}$$

Exercise 9.3

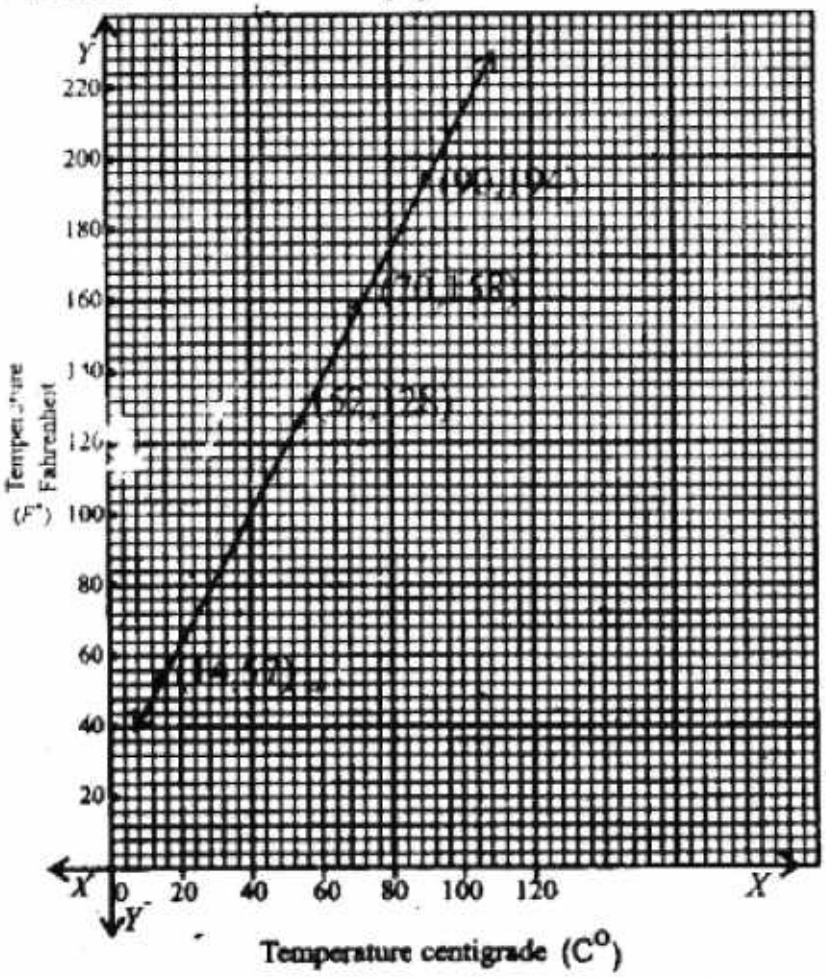
1- ***The table given temperatures in degrees Fahrenheit ^{o}F and the equivalent values in degrees Centigrade ^{o}C.***

Temperature in ^{o}F	57	126	158	194
Temperature in ^{o}C	14	52	70	90

Plot these points on a graph paper for centigrade values from 0 to 100 and Fahrenheit value from 0 to 220. Let 5 small sqaures represent 20 units on each axis. Use your graph to convert the following:

(a) $97^{o}F$ into ^{o}C (b) $127^{o}F$ into ^{o}C

(c) $25^{o}C$ into ^{o}F (d) $80^{o}C$ into ^{o}F



(a) $F^{o} = 97^{o}$, $C^{o} =$ (b) $F^{o} = 127^{o}$, $C = 36^{o}$

(c) $C = 25^{o}$, $F =$ (d) $C = 80^{o}$, $F =$

(a) $F = 97^{o}$ then $C = 36^{o}$

(b) $F = 127^{O}$ then $C = 53^{O}$

(c) $C = 25^{O}$ then $F = 77^{O}$

(d) $C = 80^{O}$ then $F = 176^{O}$

2- ***The table shows the conversion from US Dollar ($) to Pounds (£) for various amounts of money.***

$	50	100	200
£	35	70	140

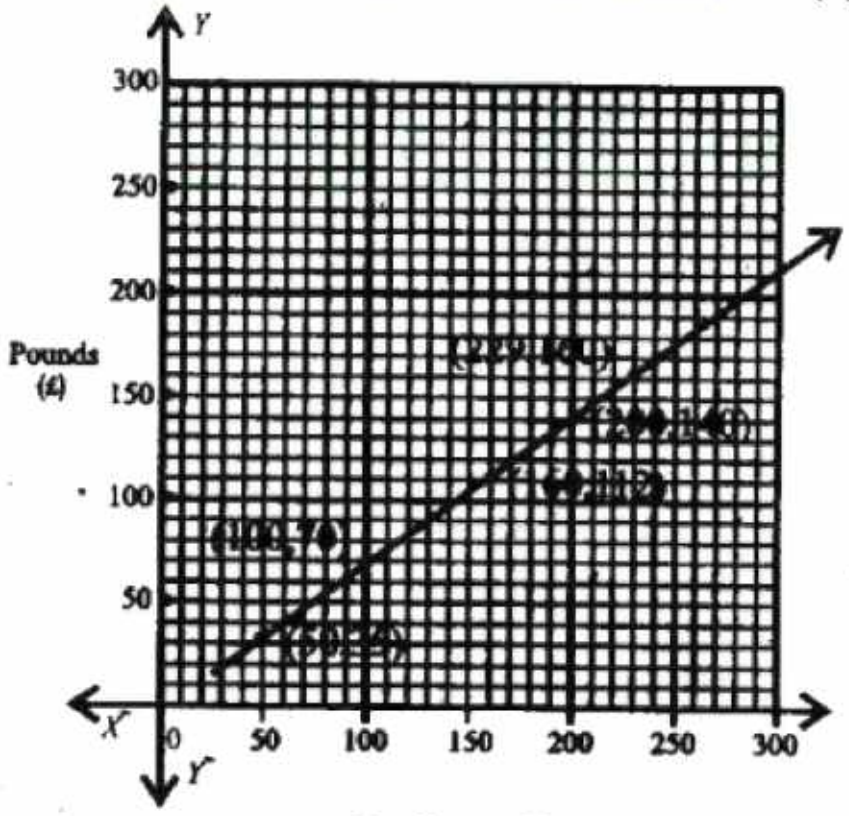
Plot these points on a graph paper and draw a straight line to pass through them. Let 5 small squares represent 50 units on each axis. Use your graph to convert the following:

(a) 160 dollars into £ **(b)** 96 dollars into £

(c) 120 £ into dollars **(d)** 76£ into dollars

$160 = £ ... (b) $160 = £ .... (a)

£160 = $ ... (d) £160 = $ ... (c)



From graph:

(a) $160 = £ 112

(b) $160 = £ 112

(c) £160 = $ 229

(d) £160 = $ 229

3- ***The table below gives various distances in kilometers with the equivalent values in miles.***

Kilometers	0	100	200	300
Miles	0	62.5	125	187.5

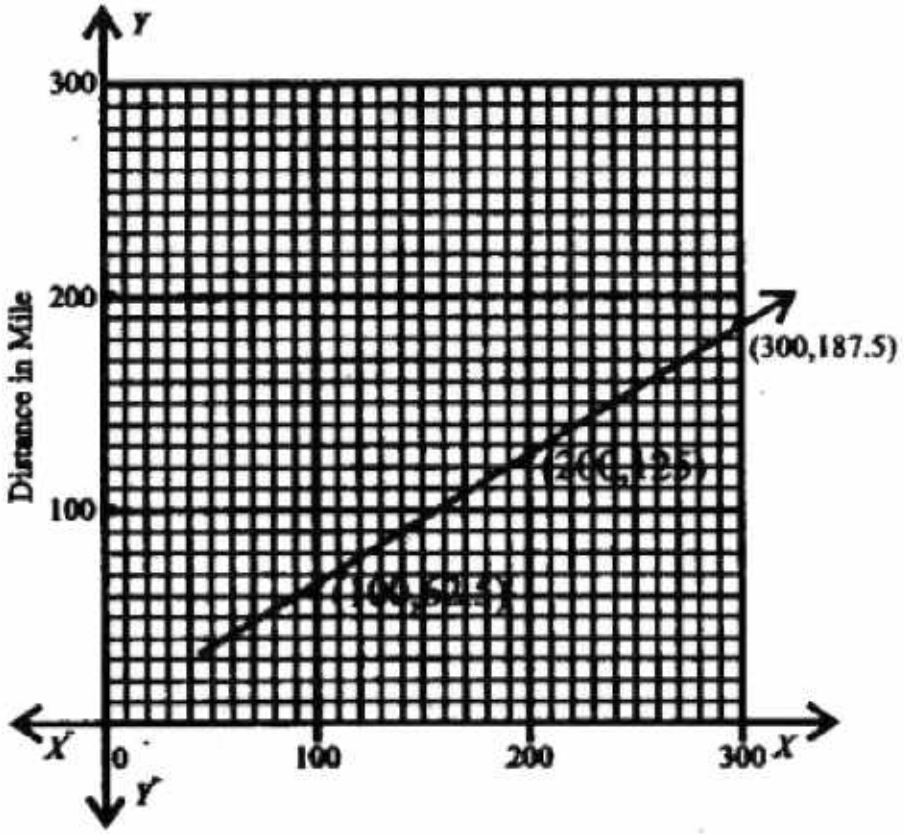
Plot these values on a graph paper taking 10 small squares equal to 100 kilometers on x-axis and 10 small squares equal to 100 miles on y-axis. Use your graph to convert the following:

(a) 140 kilometers into miles.

(b) 175 kilometers into miles.

(c) 50 miles into kilometers.

(d) 100 miles into kilometers.



Distance in Kilometer

From graph:

Answers:

(a) 140 km = 87.5 miles

(b) 175 km = 109.4 miles

(c) 50 miles ≐ 80 km

(d) 100 miles = 160 km

4- Use the graph in article 9.2.3 to convert:

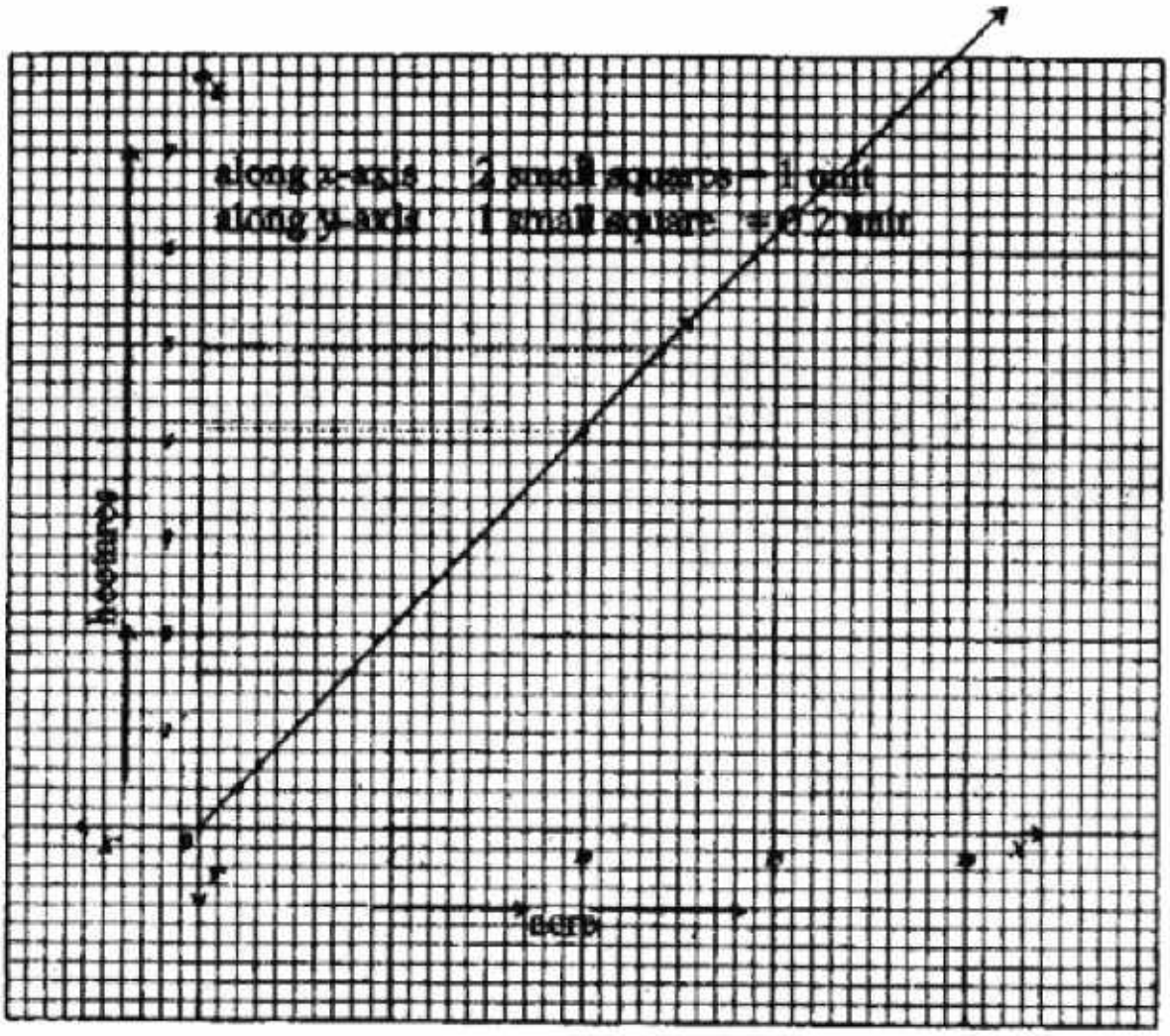
(a) 6 acres = ... Hectares

(b) 18 acres = ... Hectares

(c) 6.0702 hectare = ...acres.

(d) 24 acres = ... Hectares

(e) 11.3311 hectares = ... acres.



kilometers

From graph:

(a) 6 acres = 2.43 hectares

(b) 18 acres = 7.3 hectares

(c) 6.0702 hectares = 15 acres

(d) 24 acres = 9.7 hectares

(e) 11.3311 hecatres = 28.0 acres