Chapter –4

Pair of Linear Equations in Two Variables

Key Points:

•An equation of the form ax + by + c = 0, where a, b,c are real numbers ($a \neq 0$, $b \neq 0$) is called a linear equation in two variables x and y.

Ex: (i)4 x – 5y + 2 =0

(ii)3x-2y=4

•The general form for a pair of linear equations in two variables x and y is

$$a_1x + b_1y + c_1 = 0$$
$$a_2x + b_2y + c_2 = 0$$

Where a_1, b_1, c_1, a_2, b_2, c_2 are all Real Numbers and $a_1 \neq 0$, $b_1 \neq 0$, $a_2 \neq 0$, $b_2 \neq 0$.

Examples

•Graphical representation of a Pair of Linear Equations in two variables:

$$a_1x + b_1y + c_1 = 0$$
$$a_2x + b_2y + c_2 = 0$$

(i) Will represent intersecting lines if

i.e. unique solution. And this type of equations are called consistent pair of linear equations.

Ex: 5x – 2y = 0

3x + 9y – 20 = 0

(ii) Will represent overlapping or coincident lines if

i.e. Infinitely many solutions, consistent or dependent pair of linear equations

Ex: 2x + 3y – 9 = 0 ,

4x + 6y – 20 = 0

(iii) Will represent parallel lines if

i.e. no solution and called inconsistent pair of linear equations

Ex: $x + 2y - 4 = 0$

$2x + 4y - 12 = 0$

(iv) Algebraic methods of solving a pair of linear equations:

(i) Substitution method

(ii) Elimination Method

(iii) Cross multiplication method

System	**No of solutions**	**Nature of lines**
Consistent	Unique solution	Intersecting lines
Consistent	Infinite solutions	Coincident lines
Inconsistent	No solution	Parallel lines

Short Type Questions

1.The ratio of incomes of two persons is 9 : 7 and the ratio of their expenditures is 4 : 3. If each of them manages to save Rs 2000 per month, find their monthly income?

Sol: Let the monthly income be Rs x

Monthly Expenditure be Rs y

Ratio of incomes of two persons = 9 : 7

Income of first person = Rs 9x

Income of second person = Rs. 7x

Expenditure of first person = Rs 4y

Expenditure of second person = Rs 3y

Each one savings per month = Rs 2000

As per problem

$9x - 4y = 2000 \rightarrow (1)$

$7x - 3y = 2000 \rightarrow (2)$

$(1) \times 3 \Rightarrow 27x - 12y = 6000$

$(2) \times 4 \Rightarrow 28x - 12y = 8000$

$\quad - \qquad + \qquad -$

$x \qquad = +2000$

Income of first person = 9×2000 = Rs. 18000

Income of second person = 7×2000 = Rs. 14000.

2.The sum of a two digit number and the number obtained by reversing the digits is 66. If the digits of the number differ by 2, find the number how many such numbers are there?

Sol: Let the number in the units place = x

Ten's place = y

$\therefore$ The number = 10 y + x

On reversing the digits = 10x + y

According to the problem

$(10y + x) + (10x + y) = 66$

$x + y = 6 \rightarrow (1)$

Difference of the digits = 2

$x - y = 2 \rightarrow (2)$

$$\begin{array}{l} x + y = 6 \\ \underline{x - y = 2} \\ 2x \quad = 8 \end{array}$$

$x = 4$

Substitute the value of x in eq (1) or (2)

$x - y = 2$

$4 - y = 2 \Rightarrow y = 2$

$\therefore$ The number = $10 \times 4 + 2 = 42$

There are only numbers possible ie 42 and 24.

3.The larger of two complementary **angles exceeds the smaller by 18°. Find the angles .**

Sol: Let the larger complementary angle be x°

The smaller complementary angle be y°

As per problem

$x = y + 18$

$x - y = 18 \rightarrow (1)$

Sum of the supplementary angles is 90°

$x + y = 90° \rightarrow (2)$

$$\begin{array}{r} x - y = 18 \\ x + y = 90 \\ \hline 2x \quad = 108 \end{array}$$

$x = 54$

Substitute the value of x in (1) or (2)

$x - y = 18$

$54 - y = 18 \Rightarrow y = 36°.$

4.Two angles are supplementary The larger angle is 3° less than twice the measure of the smaller angle. Find the measure of each angle.

Sol: Let the larger supplementary angle be x°

Smaller supplementary angle be y°

As per problem

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

Sum of the supplementary angles is 180°

$x + y = 180 \rightarrow (2)$

$$\begin{array}{r} x + y = 180 \\ x - 2y = -3 \\ - \quad + \quad + \\ \hline 3y \quad = 183 \end{array} \Rightarrow y = 61$$

Substitute the value of y in (1) or (2)

$x + y = 180$

$x + 61 = 180 \Rightarrow x = 119°$

$\therefore$Two angles are 119°, 61°.

5.Mary told her daughter seven years ago, I was seven Times as old as you were then also three years from now, I shall be three times as old as you will be find the present age of Mary and her daughter.

Sol: Let Mary's present age be x years and her daughter's age be y years.

Then, seven years ago Mary's age was $x - 7$ and

Daughter's age was $y - 7$

As per problem

$$x - 7 = 7(y - 7)$$

$$x - 7y + 42 = 0 \rightarrow (1)$$

Three years hence, Mary's age will be $x + 3$ and

Daughter's age will be $y + 3$

$$x + 3 = 3(y + 3)$$

$$x - 3y - 6 = 0 \rightarrow (2)$$

$$x - 7y = -42$$

$$x - 3y = 6$$

$$-\quad +\quad -$$

$$-4y = -48 \Rightarrow y = 12$$

Substitute the value of y in (1) or (2)

$$x - 3y = 6$$

$$x - 36 = 6 \Rightarrow x = 42$$

$\therefore$ Mary's present age is 42 years and her daughter's age is 12 years.

6.An Algebra text book has a total of 1382 pages. It is broken up into two parts the second part of the book has 64 pages more than the first part. How many pages are in each part of the book?

Sol: Let the first part be x pages

The second part be y pages

Total number of pages = 1382 $\Rightarrow x + y = 1382 \rightarrow (1)$

According problem

$$y = x + 64$$

$x - y = -64 \rightarrow (2)$

$x + y = 1382$

$x - y = -64$

$2x \quad = 1318$

$$x = \frac{1318}{2} = 659$$

Substitute the value of x in (1) or (2)

$x - y = -64$

$659 - y = -64$

$723 = y$

$\therefore$ Number of pages in each part 659 and 723

7.A chemical has two solutions of hydrochloric acid in stock one is 50% solution and the other is 80% solution. How much of each should be used to obtain 100 ml of a 68% solution.

Sol: Let the first solution be x ml

Second solution be y ml

Total solution is 100ml

$x + y = 100\text{ml} \rightarrow (1)$

According to the problems

50% of solution + 80% of solution = 68

$$\frac{50}{100}x + \frac{80}{100}y = 68$$

$5x + 8y = 680 \rightarrow (2)$

$(1) \times 5 \Rightarrow 5x + 5y = 500$

$5x + 8y = 680$

$- \quad - \quad -$

$+3y = +180$

$y = 60$

substitute the value of y in (1) or (2)

$$x + y = 100$$

$$x + 60 = 100 \Rightarrow x = 40$$

$\therefore$ First and second solutions are 40 ml and 60ml.

Essay Type Questions

1.A man travels 370 km partly by train and partly by car. If he covers 250 km by train and the rest by car, It takes him 4 hours. But if he travels 130 km by train and the rest by car, it takes 18 minutes more. Find the speed of the train and that of the car.

Sol: Let the speed of the train be x km/hour

Speed of the car be y km/hour

We know that time $=\frac{speed}{\text{distance}}$

Case (1) time spent travelling by train $=\frac{250}{\text{x}}hours$

Time spent travelling by car $=\frac{120}{\text{y}}hours$

Total time taken $=\frac{250}{\text{x}}+\frac{120}{y}$

But, total time of journey is 4 hours (given)

$$\frac{250}{\text{x}}+\frac{120}{y}=4$$

$$\frac{125}{\text{x}}+\frac{60}{y}=2 \longrightarrow (1)$$

Case(2): Time spent travelling by train $=\frac{130}{x}hours$

Time spent travelling by car $=\frac{240}{y}hours$

Total time taken $=\frac{130}{x}+\frac{240}{y}$

Time of journey is 4 hours 18 mts (given)

$$=\frac{130}{x}+\frac{240}{y}=4\frac{18}{60}=4\frac{3}{10}hours$$

$$=\frac{130}{x}+\frac{240}{y}=\frac{43}{10} \longrightarrow (2)$$

$Let\,\frac{1}{x}=a;\frac{1}{y}=b$

125a + 60 b = 2 $\longrightarrow$(3)

130a + 240 b $=\frac{43}{10}\longrightarrow$(4)

(3) × 4 ⇒ 500a + 240 b = 8

130a + 240b $=\frac{43}{10}$

\- \- \-

370a $=8-\frac{43}{10}=\frac{37}{10}$

$$a=\frac{37}{10}\times\frac{1}{370}=\frac{1}{100}$$

Substitute the value of a in (3) or (4)

125 a + 60b = 2

$$125\times\frac{1}{100}+60b=2\Rightarrow b=\frac{1}{80}$$

$$So\,a=\frac{1}{100};b=\frac{1}{80}$$

$$a=\frac{1}{100}\Rightarrow\frac{1}{x}=\frac{1}{100}\Rightarrow x=100km/hour$$

$$b=\frac{1}{80}\Rightarrow\frac{1}{y}=\frac{1}{80}\Rightarrow y=80km/hour$$

Speed of train was 100 km/hour and

Speed of car was 80 km/hour

2. Solve: $\frac{5}{x-1}+\frac{1}{y-2}=2$

$\frac{6}{x-1}+\frac{3}{y-2}=1$

Sol: $\frac{5}{x-1}+\frac{1}{y-2}=2$

$$\frac{6}{x-1}+\frac{3}{y-2}=1$$

Let $\frac{1}{x-1}=a:\frac{1}{y-1}=b$

5a + b = 2 $\rightarrow$ (1)

6a – 3b = 1 $\rightarrow$ (2)

(1) ×3 $\Rightarrow$ 15a + 3b = 6

6a - 3b = 1

21a = 7

$$a=\frac{1}{3}$$

Substitute the value of a in (1) or (2)

5a + b = 2

$$5.\frac{1}{3}+b=2\Rightarrow b=\frac{1}{3}$$

$$a=\frac{1}{3}\Rightarrow\frac{1}{x-1}=\frac{1}{3}\Rightarrow x-1=3\Rightarrow x=4$$

$$b=\frac{1}{3}\Rightarrow\frac{1}{y-2}=\frac{1}{3}\Rightarrow y-2=3\Rightarrow y=5$$

3. $\frac{2}{\sqrt{x}}+\frac{3}{\sqrt{y}=2}=2;\frac{4}{\sqrt{x}}-\frac{9}{\sqrt{y}}=-1$

Sol: $2\left(\frac{1}{\sqrt{x}}\right)+3\left(\frac{1}{\sqrt{y}}\right)=2$

$$4\left(\frac{1}{\sqrt{x}}\right)-9\left(\frac{1}{\sqrt{y}}\right)=-1$$

$$Let\frac{1}{\sqrt{x}}=a;\frac{1}{\sqrt{y}}=b$$

2a + 3b = 2 $\rightarrow$ (1)

4a – 9b = -1 $\rightarrow$ (2)

(1) × 2 $\Rightarrow$ 4a + 6b = 4

$$\begin{array}{r} 4a - 9b = -1 \\ - \quad + \quad\quad + \\ \hline 15b = 5 \end{array}$$

$$b=\frac{5}{15}=\frac{1}{3}$$

Substitute the value of b in (1)

$2a + 3b = 2$

$2a + 3.\ \frac{1}{3} = 2$

$2a + 1 = 2 \Rightarrow a = \frac{1}{2}$

$$a=\frac{1}{2}\Rightarrow\frac{1}{\sqrt{x}}=\frac{1}{2}\Rightarrow\sqrt{x}=2\Rightarrow\left(\sqrt{x}\right)^2=2^2\Rightarrow x=4$$

$$b=\frac{1}{3}\Rightarrow\frac{1}{\sqrt{y}}=\frac{1}{3}\Rightarrow\sqrt{y}=3\Rightarrow\left(\sqrt{y}\right)^2=3^2\Rightarrow y=9$$

4. 6x + 3y = 6xy

2x + 4y = 5xy

Sol: $6x + 3y = 6xy$

$2x + 4y = 5xy$

$$\frac{6x+3y}{xy}=6$$

$$\frac{6}{y}+\frac{3}{x}=6\longrightarrow(1)$$

$$\frac{2x+4y}{xy}=5$$

$$\frac{2}{y}+\frac{4}{x}=5\longrightarrow(2)$$

$$Let\frac{1}{x}=a;\frac{1}{y}=b$$

$3a + 6b = 6 \rightarrow (3)$

$4a + 2b = 5 \rightarrow (4)$

$$\begin{array}{rl} & 3a + 6b = 6 \\ (4) \times 3 \Rightarrow & 12a + 6y = 15 \\ & - \quad - \quad\quad - \\ \hline & -9a = -9 \end{array}$$

$a = 1$

Substitute the value of a in (3) or (4)

$3a + 6b = 6$

$3 \times 1 + 6b = 6$

$6b = 3$, $b = \frac{1}{2}$

$a = 1 \Rightarrow \frac{1}{x} = 1 \Rightarrow x = 1$

$b = \frac{1}{2} \Rightarrow \frac{1}{y} = \frac{1}{2} \Rightarrow y = 2$

5. $\frac{10}{x+y} + \frac{2}{x-y} = 4$

$\frac{15}{x+y} - \frac{5}{x-y} = -2$

Sol: $\frac{10}{x+y} + \frac{2}{x-y} = 4$

$\frac{15}{x+y} - \frac{5}{x-y} = -2$

$Let \frac{1}{x+y} = a; \frac{1}{x-y} = b$

$10a + 2b = 4 \rightarrow (1)$

$15a - 5b = -2 \rightarrow (2)$

$(1) \times 5 \Rightarrow 50a + 10b = 20$

(2) × 2 ⇒ 30a – 10b = -4

80a = 16

$$a = \frac{16}{80} = \frac{1}{5}$$

Substitute the value of a in (1) or (2)

15a – 5b = -2

$15.\ \frac{1}{5}$ - 5b = -2

3 – 5b = - 2⇒ -5b = -5 ⇒ b = 1

$$a = \frac{1}{5} \Rightarrow \frac{1}{x+y} = \frac{1}{5} \Rightarrow x+y=5$$

$$b=1 \Rightarrow \frac{1}{x-y} = 1 \Rightarrow x-y=1$$

x + y = 5 → (3)

x – y = 1 → (4)

2x = 6

x = 3

Substitute the value of x in (3) or (4)

x + y = 5

3 + y = 5

y = 2

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

$$\frac{1}{2(3x+y)} - \frac{1}{2(3x-y)} = -\frac{1}{8}$$

Sol: Let $\frac{1}{3x+y} = a; \frac{1}{3x-y} = b$

$$a+b = \frac{3}{4}$$

$$\frac{a}{2}-\frac{b}{2}=-\frac{1}{8}\Rightarrow a-b=-\frac{1}{4}$$

$$a + b = \frac{3}{4} \quad \rightarrow (1)$$

$$a - b = -\frac{1}{4} \quad \rightarrow (2)$$

$$2a \quad = \frac{3}{4}-\frac{1}{4}=\frac{2}{4}=\frac{1}{2}$$

Substitute the value of a in (1) or (2)

$$a+b=\frac{3}{4}$$

$$\frac{1}{4}+b=\frac{3}{4}$$

$$b=\frac{3}{4}-\frac{1}{4}=\frac{2}{4}=\frac{1}{2}$$

$$a=\frac{1}{4}\Rightarrow\frac{1}{3x+y}=\frac{1}{4}\Rightarrow 3x+y=4$$

$$b=\frac{1}{2}\Rightarrow\frac{1}{3x-y}=\frac{1}{2}\Rightarrow 3x-y=2$$

$$3x + y = 4 \quad \rightarrow (3)$$

$$3x - y = 2 \quad \rightarrow (4)$$

$$6x \quad = 6$$

$$x = 1$$

Substitute the value of x in (3) or (4)

$$3x + y = 4$$

$$3.1 + y = 4$$

$$y = 1$$

7.A boat goes 30 km upstream and 44km downstream in 10 hours. In 13 hours it can go 40 km upstream and 55km downstream. Determine the speed of the stream and that of the boat in still water?

Sol: Let the speed of the boat = x km/hour

The speed of the stream = y km /hour

Relative speed upstream = (x - y) km/hour

Relative speed downstream = (x + y) km/hour

Distance travelled to upstream = 30 km

Time taken to up = $\frac{30}{x-y} hours$

Distance travelled to downstream = 40 lm

Time taken $=\frac{44}{x+y} hours$

Total time taken $=\frac{30}{x-y}+\frac{44}{x+y}$

Total time taken = 10 hours (Given)

$$\frac{30}{x-y}+\frac{44}{x+y}=10 \longrightarrow (1)$$

Distance travelled to upstream = 40km

Time taken to up $=\frac{40}{x-y} hours$

Distance travelled to downstream = 55km

Time taken $=\frac{55}{x+y} hours$

Total time taken = 13 hours (Given)

$$\frac{40}{x-y}+\frac{55}{x+y}=13 \longrightarrow (2)$$

$$\frac{30}{x-y}+\frac{44}{x+y}=10$$

$$\frac{40}{x-y}+\frac{55}{x+y}=13$$

$Let \frac{1}{x-y} = a; \frac{1}{x+y} = b$

30a + 44b = 10 $\rightarrow$ (3)

40a + 55b = 13 $\rightarrow$ (4)

(3) $\times$ 4 $\Rightarrow$ 120a + 176y = 40

(4) $\times$ 3 $\Rightarrow$ 120a + 165y = 39

-      -   -

11b = 1 $\Rightarrow b = \frac{1}{11}$

Substitute the value of b in (3) or (4)

30a + 44b = 10

30a + 44 . $\frac{1}{11}$ = 10

30a = 10 – 4 = 6 $\Rightarrow a = \frac{1}{5}$

$a = \frac{1}{5} \Rightarrow \frac{1}{x-y} = \frac{1}{5} \Rightarrow x - y = 5$

$b = \frac{1}{11} \Rightarrow \frac{1}{x+y} = \frac{1}{11} \Rightarrow x + y = 11$

x – y = 5 $\rightarrow$ (5)

x + y = 11 $\rightarrow$ (6)

2x = 16

x = 8

substitute the value of x in (5) or (6)

x + y = 11

8 + y = 11 $\Rightarrow$ y = 3

$\therefore$ Speed of the boat = 8km/hour

Speed of the stream = 3km/hour

8.2 women and 5 men can together finish an embroidery work in 4 days while 3 women and 6 man can finish it in 3 days. Find the time taken by 1 women alone and 1 man alone to finish the work.

Sol: Let the time taken by one women to finish the work = x days

Work done by one women in one day $=\frac{1}{x}$

Let the time taken by are men to finish the work = y days

Work done by one man in one day $=\frac{1}{y}$

According to the problem

2 women and 5 men can together finish an embroidery work in 4 days.

Work done by 2 women and 5 man in one day $=\frac{1}{4}$

So work done by 2 women in one day $=2\times\frac{1}{x}=\frac{2}{x}$

Work done by 5 men in one day $=5\times\frac{1}{y}=\frac{5}{y}$

Total work $=\frac{2}{x}+\frac{5}{y}$

$$=\frac{2}{x}+\frac{5}{y}=\frac{1}{4}\longrightarrow(1)$$

Also 3 women and 6men can finish the work in 3 days

Work done by 3 women and 6 men in one day

$$=\frac{3}{x}+\frac{6}{y}=\frac{1}{3}\longrightarrow(2)$$

$$\frac{1}{x}=a;\frac{1}{y}=b$$

$$2a+5b=\frac{1}{4}\longrightarrow(2)$$

$$3a+6b=\frac{1}{3}\longrightarrow(4)$$

$$(3) \times 3 \Rightarrow 6a + 15b = \frac{3}{4}$$

$$(4) \times 2 \Rightarrow 6a + 12b = \frac{2}{3}$$

- - -

$$3b = \frac{3}{4} - \frac{2}{3} = \frac{9-8}{12} = \frac{1}{12}$$

$$b = \frac{1}{36}$$

Substitute 1 value of b in (3) or (4)

$$2a + 5b = \frac{1}{4}$$

$$2a + 5.\frac{1}{36} = \frac{1}{4}$$

$$2a = \frac{1}{4} - \frac{5}{36} = \frac{9-5}{36} = \frac{4}{36}$$

$$a = \frac{4}{36} \times \frac{1}{2} = \frac{1}{18}$$

$$a = \frac{1}{18} \Rightarrow \frac{1}{x} = \frac{1}{18} \Rightarrow x = 18$$

$$b = \frac{1}{36} \Rightarrow \frac{1}{y} = \frac{1}{36} \Rightarrow y = 36$$

Time taken by one women to finish the work = 18days

Time taken by one men to finish the work = 36 days.

Graphical method of finding solution of a pair of linear equations

1.10 students of class – X took part in a maths quiz. If the number of girls is 4 more than number of boys then find the number of boys and the number of girls who took part in the quiz.

Sol: Let the number of boys = x

The number of girls = y

Total number of students took part in maths quiz = 10

$x + y = 10 \rightarrow (1)$

if the number of girls is 4 more than no.of boys y = x + 4

$x - y = -4 \rightarrow (1)$

$x + y = 10$

$y = 10 - x$

x	y = 10 –x	(x, y)
0	y = 10	(0, 10)
2	y = 8	(2, 8)
4	y = 6	(4, 6)
6	y = 4	(6, 4)

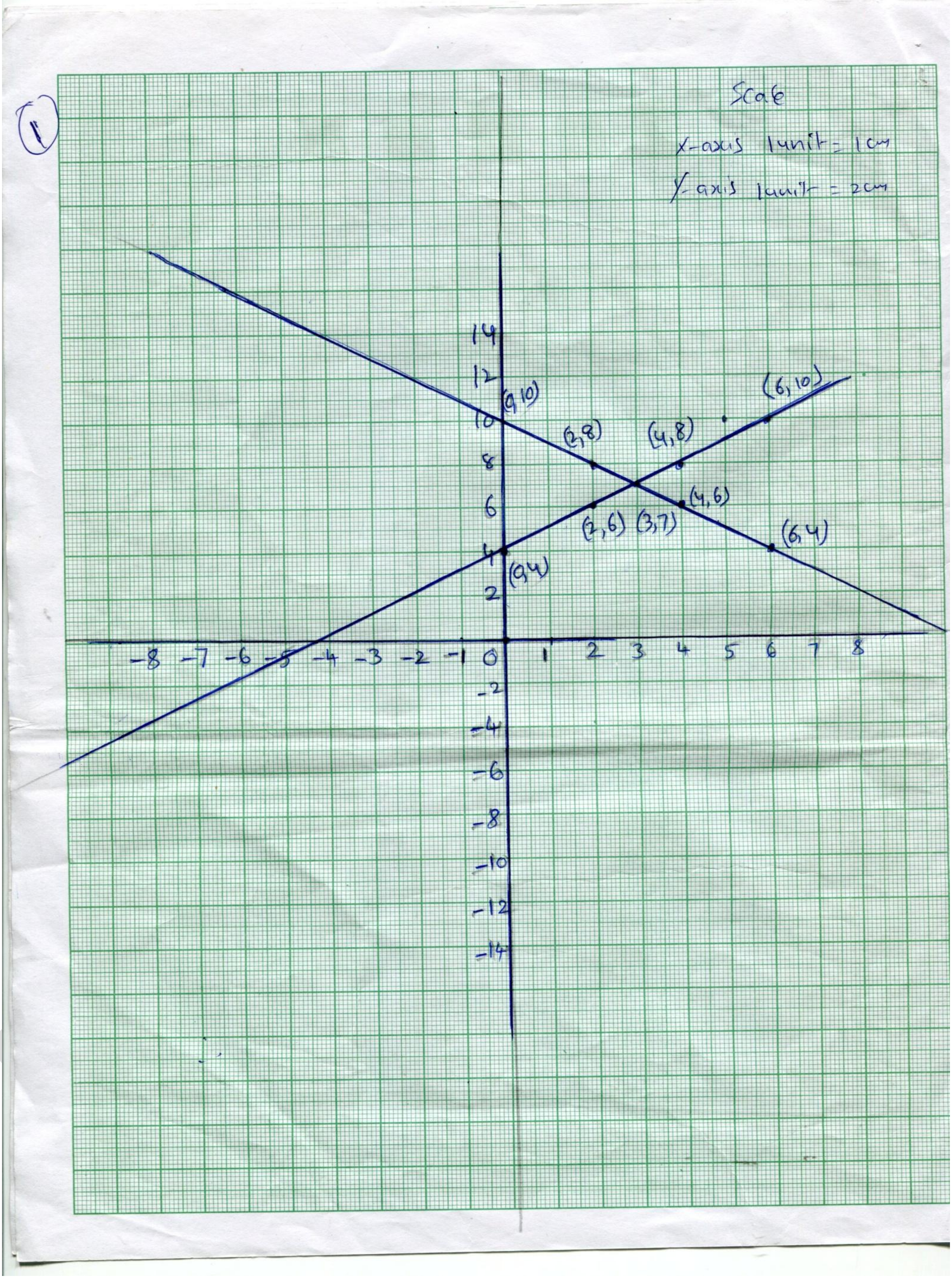
$x - y = -4$

$y = x + 4$

x	y	(x, y)
0	4	(0, 4)
2	6	(2, 6)
4	8	(4, 8)
6	10	(6, 10)

$\therefore$ Number of boys = 3

Number of girls = 7



1
Scale
X-axis 1unit = 1cm
Y-axis 1unit = 2cm
(0,10)
(2,8)
(4,8)
(6,10)
(4,6)
(2,6)
(3,7)
(6,4)
(0,4)

2.5 pencils and 7 pens together cost Rs 50. Where as 7 pencils and 5 pen together cost Rs. 46. Find the cost of one pencils and one pen?

Sol: Cost of one pencil is Rs x

Cost of one pen is Rs y

5 pencils and 7 pens together cost = Rs50

5x + 7y = 50 → (1)

7 pencils and 5 pens together cost = Rs. 46

7x + 5y = Rs 46 → (2)

5x + 7y = 50

$$y = \frac{50 - 5x}{7}$$

x	y	(x, y)
0	$\frac{50}{7} = 7.1$	(0, 7.1)
1	$\frac{45}{7} = 6.5$	(1, 6.5)
2	$\frac{40}{7} = 5.7$	(2, 5.7)

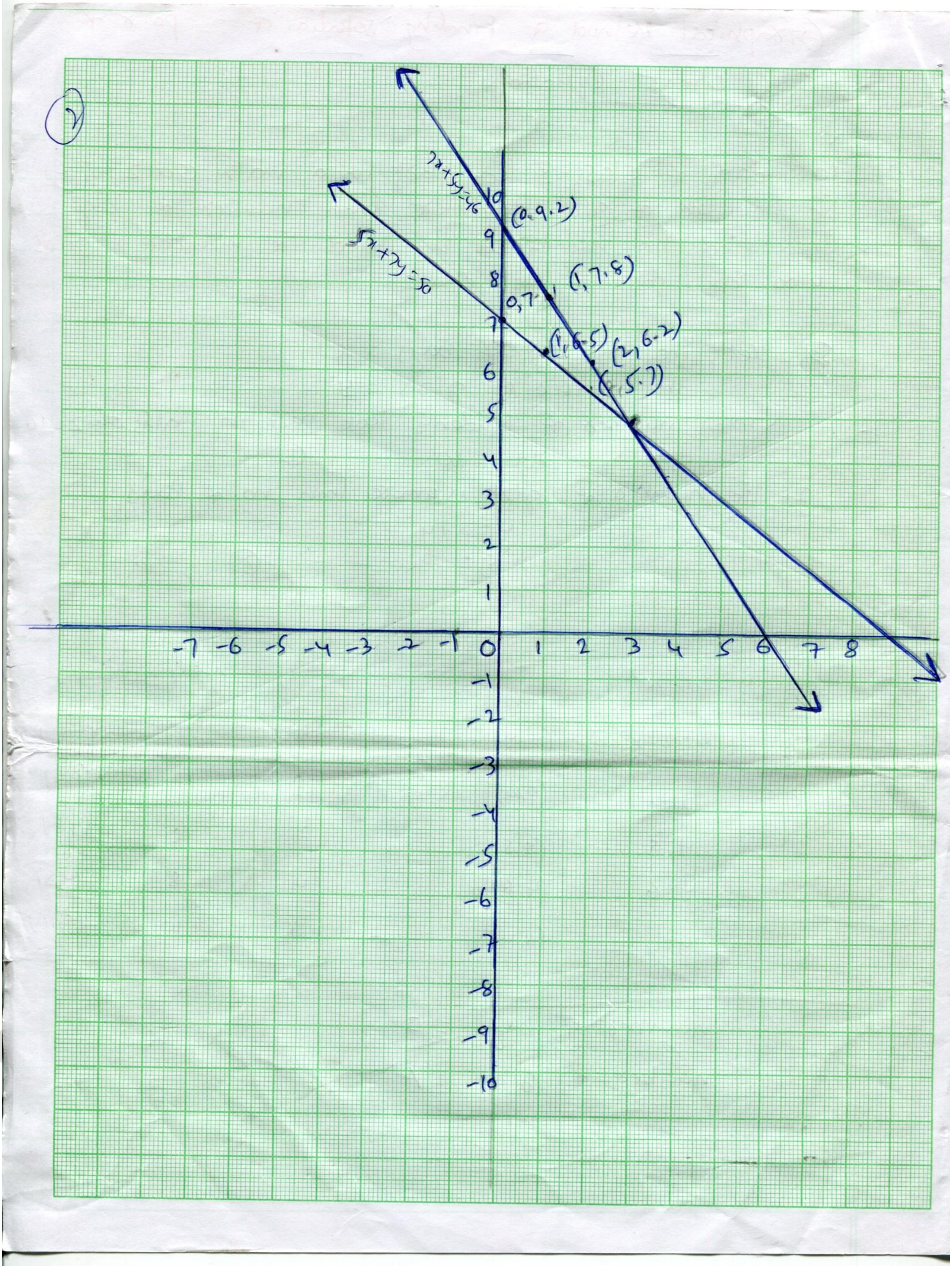
7x + 5y = 46

$$y = \frac{46 - 7x}{5}$$

x	y	(x, y)
0	9.2	(0, 9.2)
1	7.8	(1, 7.8)
2	6.2	(2, 6.2)

Cost of a pencil = Rs 3.

Cost of a pen = Rs 5.


2
7x+5y=46
5x+7y=50
(0, 9.2)
(1, 7.8)
0, 7.1
(1, 6.5)
(2, 6.2)
(2, 5.7)
10
9
8
7
6
5
4
3
2
1
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
-7
-6
-5
-4
-3
-2
-1
1
2
3
4
5
6
7
8

3.The perimeter of a rectangular plot is 32m. If the length is increased by 2m and the breadth is decreased by 1m. The area of the plot remains the same. Find the length and breadth of the plot.

Sol: Let the length and breadth of Rectangular plot is l and b m.

Area of rectangle = lb units

Perimeter = 2 (l + b) = 32

When length is increased by 2m and the breadth is decreased by 1m. Then area = $(l + 2)$ (b - 1)

Since there is no change in the area

$(l + 2)(b - 1) = lb$

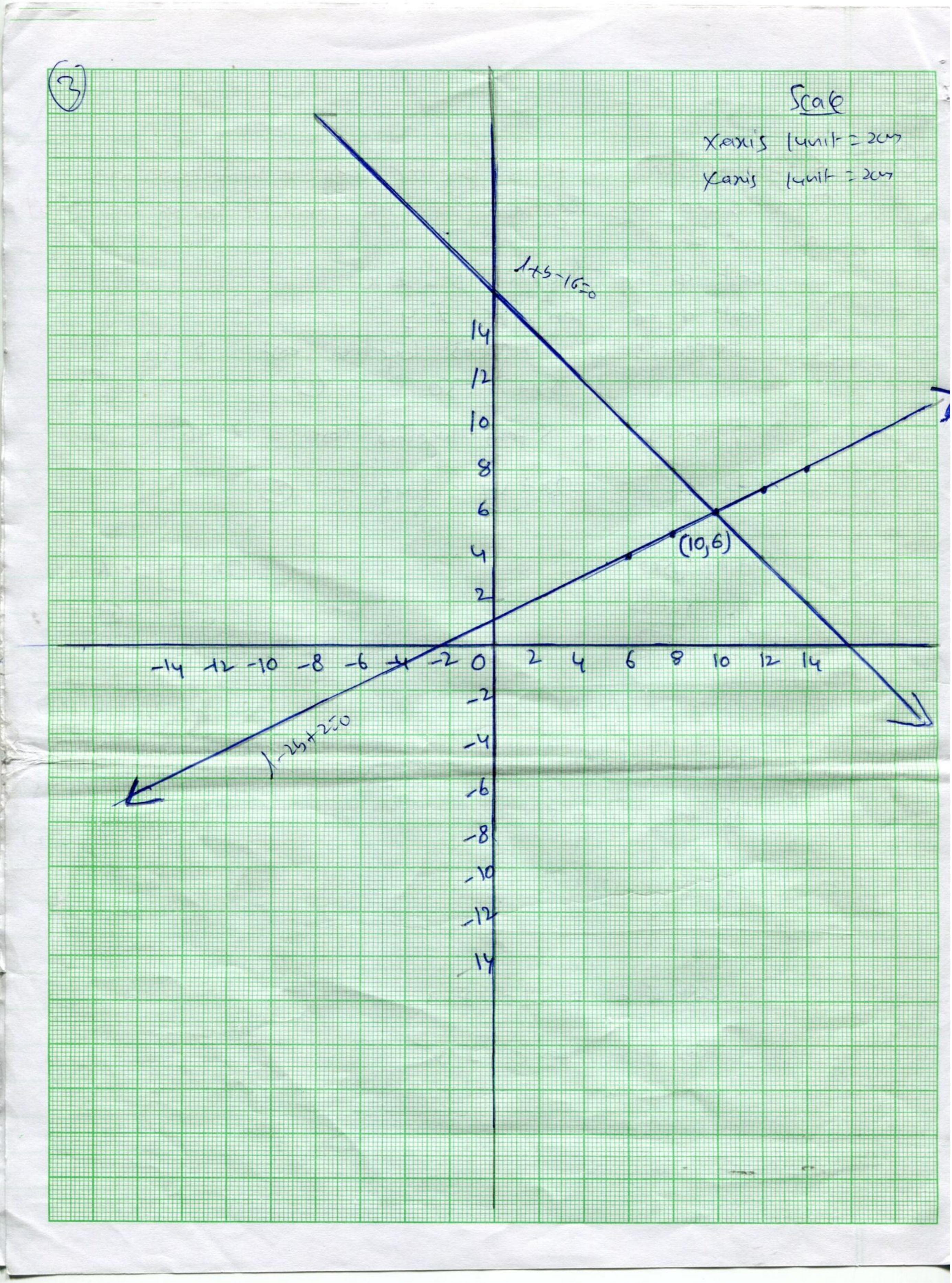
$l - 2b + 2 = 0 \rightarrow (2)$

$l + b - 16 = 0$

l	b	(l, b)
6	10	(6, 10)
8	8	(8, 8)
10	6	(10, 6)
12	4	(12, 4)
14	2	(14, 2)

$l - 2b + 2 = 0$

l	b	(l, b)
6	4	(6, 4)
8	5	(8, 5)
10	6	(10, 6)
12	7	(12, 7)
14	8	(14, 8)


3
Scale
X axis 1 unit = 2cm
Y axis 1 unit = 2cm
x+y-16=0
x-2y+2=0
(10,6)
-14 -12 -10 -8 -6 -4 -2 0 2 4 6 8 10 12 14
14 12 10 8 6 4 2 -2 -4 -6 -8 -10 -12 -14

Fill in the blanks:

1) An equation of the form ax+by+c=0 where a,b,c are real numbers and where atleast one of a or b is not zero is called .... equation.
2) The general form of linear equation is ....
3) A linear equation in two variables has .... solutions.
4) The graph of a linear equation in two variables is a ....
5) Two lines are drawn in the same plane , then the lines may intersect at .... point.
6) The graph of a pair of linear equations in two variables then the lines intersect at a one point gives the .... solution of the equations.
7) If the lines coincide then they are .... solutions.
8) If the lines are parallel then the pair of equations has .... solutions.
9) 3x+2y=5,2x-3y=7 then the pair of linear equations is ....
10) 2x-3y=8 , 4x-6y=9 then the pair of linear equations is ....
11) Sum of the complimentary angles is ....
12) Sum of the supplementary angles is ....
13) Time=..................
14) The value of x in the equation 2x-(4-x)=5-x is ....
15) The equation x-4y=5 has .... solutions.
16) The sum of two numbers is 80 and their ratio is 3:5 then the first number is ....
17) The value of x in the equation 5x-8=2x-2 is ....
18) For what value of P the following pair of equations has unique solution 2x+py=-5,3x+3y=-6 is ....
19) A system of two linear equations in two variables is said to be constant if it has at least .... solutions.
20) No of solutions for the equation 3(7-3y)+4y=16 is......................
21) A system of linear equations in two variables is said to be inconsistent if it has .... solutions.

22) When two lines in the same plane may intersect is.....................

23) 3x+2y-80=0 , 4x+3y-110=0 solution for this linear equation is ....

24) X+2y-30=0 , 2x+4y-66=0 these lines represent ....

25) 4x+9y-13=0 no of unknowns in this linear equation is ....

26) In the equation 4x+3y-4=0 then a=........... , c=..................

27) Sum of two numbers is 44 then the equation form is ....

28) 4x-2y=0 , 2x-3y=0 then a1=........, c1=.........

29) The difference of two numbers is 48 then the equation is ______

30) A____ in two variables can be solved using various methods.

ANSWERS

1.Linear	2.ax+by+c=0	3.Many	4.Straight line	5.one
6.Unique	7.Infinetely	8.No	9.Consistent	10.Inconsistent
11. 90^0	12.180^0	13.Distance/speed		14.9/4
15.Infinetly many solutions		16.30 17.x=2		18.P=3
19.One	20.Unique	21.NO		22.Onepoint
23.Unique	24.Parallel lines	25.Two		26.4,-4
27.x+y=44	28.4,0	29.x-y=48	30.pair of linear equations	