SENIOR TWO LESSON NOTES.

1

TOPIC SIMULTANEOUS EQUATIONS.

This refers to apair of equations involving two unknowns and to be solved at ago. The unknowns can be any two letters.

eg (i) $2x+y=6$
$3x+2y=10$

(ii) $p+q=17$
$2p+q=8$ e.t.c

There are 4 methods of solving simultaneous equations

1. ELIMINATION METHOD
2. SUBSTITUTION METHOD
3. GRAPHICAL METHOD
4. MATRIX METHOD

1. ELIMINATION METHOD

ex. Solve the simultaneous equations using elimination method

(i) $x+y=3$
$x-y=11$

Choose the letter (unknown) to eliminate

- eliminate x by subtraction

$x+y=3$ ---- (i)
$-$ $x-y=11$ ----- (ii)
$0+2y=-8$

Side work.
$x-x=0$
$y-(-y)=2y$
$3-11=-8$

$\frac{2y}{2} = \frac{-8}{2}$

$y = -4$

Side work

$- \div + = -$

$- \div - = +$

$+ \div - = -$

$- \div - = +$

Substitute $y = -4$ in any of the two equations to get x

put $y = -4$ in eqn (i)

$x + -4 = 3$

$x - 4 = 3$

$x = 3+4$

$x = 7$

Side work

$+ \times - = -$

$+ \times + = +$

$- \times - = +$

$- \times + = -$

$\therefore$ $y = -4$ $x = 7$

or Substitute $y = -4$ in eqn (ii)

$x - y = 11$

$x - -4 = 11$

$x = 11 - 4$

$x = 7$

So the value of x is the same you use any of the two eqns of your choice to acquire the 2nd unknown.

Alternatively:

eliminate y

$$\begin{array}{rl} & x + y = 3 \text{ ----- (i)} \\ + & x - y = 11 \text{ ----- (ii)} \\ \hline & 2x + 0 = 14 \end{array}$$

Side work

$x + x = 2x$

$y + -y = 0$

$3 + 11 = 14$

$$\frac{2x}{2} = \frac{14}{2}$$

$$x = 7$$

substitute $x = 7$ in ... (ii)

$$7 - y = 11$$

$$-y = 11 - 7$$

$$\frac{-y}{-1} = \frac{4}{-1}$$

$$y = -4$$

$\therefore$ $\underline{\underline{x = 7 \text{ and } y = -4}}$

NOTE:

- Choose the unknown (one) to eliminate
- add or subtract depending on the unknown to eliminate.
  - Same coefficients and same signs we ~~add~~ subtract
  - Same coefficients and different signs we add
- To eliminate the unknown of your choice you add or subtract and get **zero**
- After getting the value of one unknown substitute its value in any of the two eqns and get the value of the other.

e.g 2.

$3a + b = 13$

$a + b = 9$

$3a + b = 13$ ---- (1)

$a + b = 9$ ----- (2)

Eliminate a.

a cannot be eliminate because

$3a - a = 2a$ so the coefficients of a must be the same. to eliminate it.

To make them the same we multiply the eqn (1) by the coefficient of a of eqn (2) and vice versa.

Coefficient of a in eqn (1) is 3

Coefficient of a in eqn (2) is 1

$1 \times [3a + b = 13]$ ---- (1)

$3 \times [a + b = 9]$ ----- (2)

$-\ 3a + b = 13$ ---- (1)

$3a + 3b = 27$ ---- (2).

$0 \mp 2b = -14$

$\frac{-2b}{-2} = \frac{-14}{-2}$

$b = 7$

Side work

$3a - 3a = 0$

$b - {}^{+}3b =$

$b - 3b = -2b$

$13 - 27 = -14$

put $b = 7$ in eqn (1)

$3a + b = 13$

$3a + 7 = 13$

$3a = 13 - 7$

$\frac{3a}{3} = \frac{6}{3}$

$a = 2$

So $a = 2$ and $b = 7$

---

you can even check whether your answers are correct.

$3a + b = 13$ $a = 2$ $b = 7$

$a + b = 9$

$3 \times 2 + 7$

$6 + 7 = 13$

and $2 + 7 = 9$

ex. 3.

$2h = 4 - 3K$

$3h + 2K - 13 = 0$

arrange the equations first by putting the same unknown underneath another.

$2h + 3K = 4$ ---- (i)

$3h + 2K = 13$ ---- (2)

To eliminate h

6

$[2h + 3k = 4 \text{ - - - - - } (1)] \times 3$ or $[2h + 3k = 4] \times 3 \text{ - } (1)$

$[3h + 2k = 13 \text{ - - - - - } (2)] \times 2$ $[3h + 2k = 13] \times 2 \text{ - } (2)$

$$\begin{array}{r} 6h + 9k = 12 \text{ - - - - } (1) \\ - \quad 6h + 4k = 26 \text{ - - - - } (2) \\ \hline 0 + 5k = -14 \end{array}$$

$$\frac{5k}{5} = \frac{-14}{5}$$

$k = -\frac{14}{5}$ or $-2\frac{4}{5}$ or $k = -2.8$

Subst. $k = \frac{-14}{5}$ in eqn (2)

$$3h + 2\left(\frac{-14}{5}\right) = 13$$

$$3h + -\frac{28}{5} = 13$$

$$3h - \frac{28}{5} = 13$$

$$(3h \times 5) - \left(\frac{28}{\cancel{5}} \times \cancel{5}\right) = 13 \times 5$$

$$15h - 28 = 65$$

$$15h = 65 + 28$$

$$\frac{15h}{15} = \frac{93}{15}$$

$h = \frac{31}{5}$ or $h = 6\frac{1}{5}$ or $h = 6.2$

ex. $2x - 3y = 12$

$3x = 1 - 4y$

Eliminate y

$$\begin{array}{l} 4\times \\ 3\times \end{array}\left[\begin{array}{l} 2x - 3y = 12 \\ 3x + 4y = 1 \end{array}\right] \begin{array}{l} \text{----- (i)} \\ \text{---- (ii)} \end{array}$$

$$\begin{array}{rl} 8x - 12y = 48 & \text{----- (i)} \\ - \quad -9x - 12y = -3 & \text{---- (ii)} \\ \hline 17x + 0 = 51 & \end{array}$$

$$\frac{17x}{17} = \frac{51}{17}$$

$$x = 3$$

put $x = 3$ in ---- (i)

$2 \times 3 - 3y = 12$

$6 - 3y = 12$

$-3y = 12 - 6$

$$\frac{-3y}{-3} = \frac{6}{-3}$$

$y = -2$

$\therefore$ $x = 3$ and $y = -2$

or $$\begin{array}{l} 4\times \\ 3\times \end{array}\left[\begin{array}{l} 2x - 3y = 12 \\ 3x + 4y = 1 \end{array}\right] \begin{array}{l} \text{--- (i)} \\ \text{--- (ii)} \end{array}$$

$$\begin{array}{rl} 8x - 12y = 48 & \text{--- (i)} \\ + \quad 9x + 12y = 3 & \text{--- (ii)} \\ \hline 17x + 0 = 51 & \end{array}$$

$$\frac{17x}{17} = \frac{51}{17}$$

$$x = 3$$

Substitute $x = 3$ in --- (ii)

$$3x + 4y = 1$$

$$3\times3 + 4y = 1$$

$$9 + 4y = 1$$

$$4y = 1 - 9$$

$$\frac{4y}{4} = \frac{-8}{4}$$

$$y = -2$$

So $x = 3$, $y = -2$.

NB. when eliminating the unknown of same coefficients and same signs we subtract while eliminating the unknown of same coefficients and different signs we add.

2 SUBSTITUTION.

ex. Solve the simultaneous equations using substitution

e.g. (1) $x + y = 3$ --- (1)

$x - y = 11$ --- (2)

Choose any unknown from any of the two eqns and make it the subject of the eqn.

Lets use x of eqn. (1)

make x the subject from eqn (1)

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

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

put $x = 3 - y$ or eqn(3) in eqn(2)

$x - y = 11$ - - - (2)

$3 - y - y = 11$

$3 - 2y = 11$

$-2y = 11 - 3$

$\frac{-2y}{-2} = \frac{8}{-2}$

$y = -4$

put $y = -4$ in eqn (3) or put $y = -4$ in eqn (1)

using eqn (3)

$x = 3 - y$

$x = 3 \overset{+}{-} -4$

$x = 7$

$x + y = 3$

$x + -4 = 3$

$x - 4 = 3$

$x = 3 + 4$

$x = 7$

or put $y = -4$ in eqn (2)

$x - y = 11$

$x \overset{+}{-} -4 = 11$

$x + 4 = 11$

$x = 11 - 4$

$x = 7$

$\therefore$ $y = -4$ & $x = 7$

ex2. $16 = 3x - 2y$

$-x + 7 = y$

$16 = 3x - 2y$

$7 = x + y$

or Make y the Subject from (1)

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

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

Substitute $y = 3 - x$ in eqn(2)

$x - (3 - x) = 11$

$x - 3 + x = 11$

$2x = 11 + 3$

$\frac{2x}{2} = \frac{14}{2}$

$x = 7$

put $x = 7$ in --- (3)

$y = 3 - x$

$y = 3 - 7$

$y = -4$

So $x = 7$ & $y = -4$

or make y the Subject from eqn(2)

$x - y = 11$

$\frac{-y}{-1} = \frac{11 - x}{-1}$ $\quad y = \frac{11}{-1} - \frac{x}{-1}$ $\quad y = -11 + x$ --- (3)

p/4 $y = -11 + x$ in eqn (1)

$x + y = 3$

$x + (-11 + x) = 3$

$x - 11 + x = 3$

$2x - 11 = 3$

$2x = 3 + 11$

$\frac{2x}{2} = \frac{14}{2}$

$x = 7$

p/4 $x = 7$ in ---- (3)

$y = -11 + x$

$y = -11 + 7$

$y = -4$

$\therefore$ $x = 7$ \& $y = -4$

ex(2) $2h + 3K = 4$ ---- (i)

$3h + 2K = 13$ ---- (ii)

make h the subject from eqn (ii)

$3h + 2K = 13$

$3h = 13 - 2K$

$\frac{\cancel{3}h}{\cancel{3}} = \frac{13 - 2K}{3}$

$h = \frac{13 - 2K}{3}$ ----- (iii)

Substitute $h = \frac{13-2K}{3}$ in (i)

$$2h + 3K = 4 \text{ --- (i)}$$

$$2\left(\frac{13-2K}{3}\right) + 3K = 4$$

$$\cancel{3} \times 2\left(\frac{13-2K}{\cancel{3}}\right) + 3K \times 3 = 4 \times 3$$

$$26 - 4K + 9K = 12$$

$$5K = 12 - 26$$

$$\frac{5K}{5} = \frac{-14}{5}$$

$$K = \frac{-14}{5} \quad \text{or} \quad K = -2.8$$

put $K = \frac{-14}{5}$ or $K = -2.8$ in --- eqn (iii)

$$h = \frac{13 - 2K}{3}$$

$$= \frac{13 - 2(-2.8)}{3}$$

$$= \frac{13 + 5.6}{3}$$

$$= \frac{18.6}{3} \qquad h = 6.2$$

so $K = -2.8$

& $h = 6.2$

NOTE:

- Make any unknown of the two from any of the equations, the subject
- After making any unknown the subject from any equation substitute it in the other equation (the other equation you havent used to make the unknown the subject)

3. GRAPHICAL METHOD:

ex. Solve the simultaneous equations using graphical method.

$x + y = 3$

$x - y = 11$

- plot & draw the two equations (lines) on a graph
- where they meet (point of intersection) is the solution of the two simultaneous equations.

$x + y = 3$

x	0	3
y	3	0

$x - y = 11$

x	0	+1	2	4	11
y	-11	-10	-9	-7	0

when $x = 0$

$0 + y = 3$

$y = 3$ $(0, 3)$

when $y = 0$

$x + 0 = 3$ $(3, 0)$

$x = 3$

when $x = 0$

$0 - y = 11$

$\frac{-y}{-1} = \frac{11}{-1}$

$y = -11$

$(0, -11)$

$x = 2$

$2 - y = 11$

$-y = 11 - 2$

$-1 \times -y = 9 \times -1$

$y = -9$

$(2, -9)$

To GRAPH $\longrightarrow$

ex. Find the coordinates of the point of intersection of the lines

$3x + 5y = -12$

$2x + y = -15$

(i) Using graph

$3x + 5y = -12$

x	-4	0	1	-4	-9
y	0	-2.4	-3	0	3

$2x + y = -15$

x	-3	0	1	$-7\frac{1}{2}$ or -7.5
y	-9	-15	-17	0

if $x = 0$ $y = ?$

$3(0) + 5y = -12$

$\frac{5y}{5} = \frac{-12}{5}$

$y = -2.4$ $(0, -2.4)$

$x = 1$

$3(1) + 5y = -12$

$3 + 5y = -12$

$5y = -12 - 3$

$\frac{5y}{5} = \frac{-15}{5}$

$y = -3$ $(1, -3)$

$x = -4$

$3(-4) + 5y = -12$

$-12 + 5y = -12$

$5y = -12 + 12$ $(-4, 0)$

$\frac{5y}{5} = \frac{0}{5}$ $y = 0$

$x = -3$ $y = ?$

$2(-3) + y = -15$

$-6 + y = -15$

$y = -15 + 6$

$y = -9$ $(-3, -9)$

$x = 0$

$2(0) + y = -15$

$0 + y = -15$

$y = -15$ $(0, -15)$

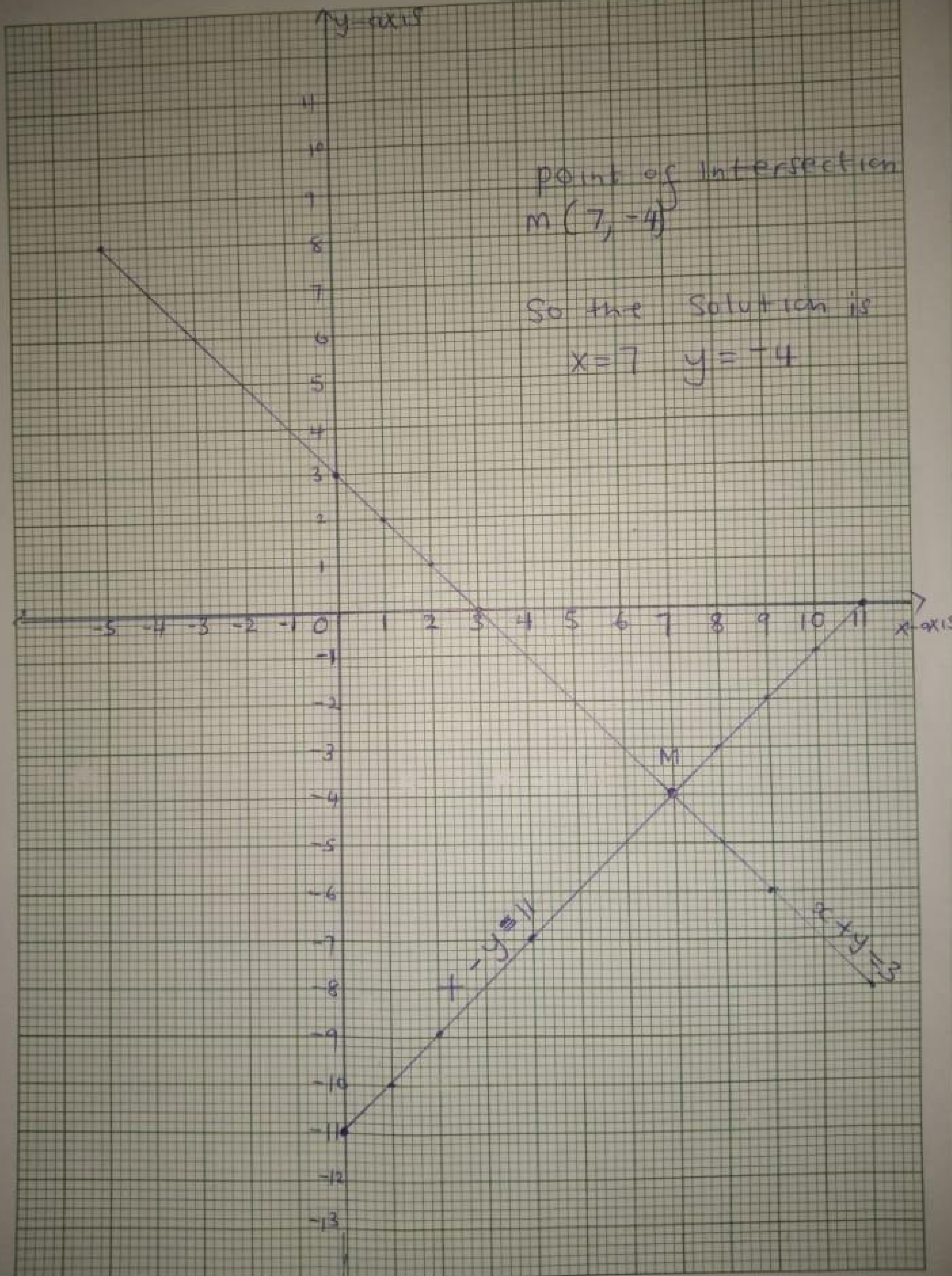
when $y = 0$ $x = ?$

$2x + 0 = -15$

$\frac{2x}{2} = \frac{-15}{2}$

$x = -7\frac{1}{2}$ or -7.5

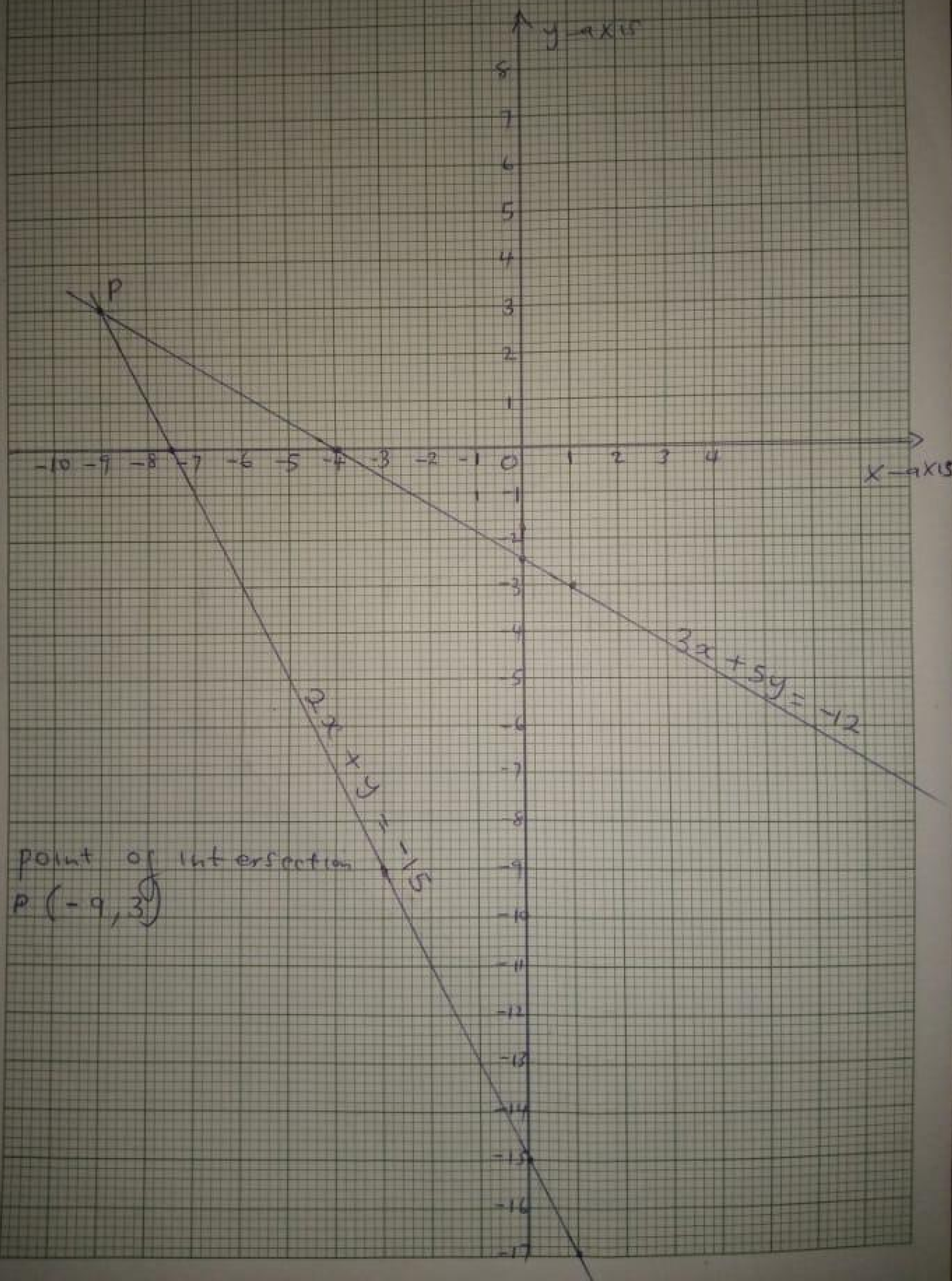
graph $\longrightarrow$



point of intersection
m (7, -4)

So the solution is

x = 7 y = -4



point of intersection
P (-9, 3)

(ii) using elimination method

$3x + 5y = -12$ --- (1)

$2x + y = -15$ ---- (2)

eliminate y

$$\begin{matrix} 1 \times \\ 5 \times \end{matrix} \left[\begin{matrix} 3x + 5y = -12 \\ 2x + y = -15 \end{matrix}\right] \begin{matrix} \text{---- (1)} \\ \text{--- (2)} \end{matrix}$$

$$\begin{array}{r} 3x + 5y = -12 \quad \text{--- (1)} \\ - \quad 10x + 5y = -75 \quad \text{--- (2)} \\ \hline -7x + 0 = 63 \end{array}$$

$$\frac{-7x}{-7} = \frac{63}{-7}$$

$$x = -9$$

put $x = -9$ in eqn (2)

$2(-9) + y = -15$

$-18 + y = -15$

$y = -15 + 18$

$y = 3$

So $x = -9$ $y = 3$

point of intersection $\underline{\underline{(-9, 3)}}$

(ii) using Substitution method

$$3x + 5y = -12 \quad \text{---} \quad (1)$$
$$2x + y = -15 \quad \text{----} \quad (2)$$

make y the subject from eqn (2)

$$2x + y = -15$$
$$y = -15 - 2x \quad \text{---} \quad (3)$$

Substitute eqn (3) in eqn (1)

$$3x + 5y = -12$$
$$3x + 5(-15 - 2x) = -12$$
$$3x - 75 - 10x = -12$$
$$-7x = -12 + 75$$
$$\frac{-7x}{-7} = \frac{63}{-7}$$
$$x = -9$$

Substitute $x = -9$ in eqn (3)

$$y = -15 - 2(-9)$$
$$= -15 + 18$$
$$y = 3$$

so $x = -9$ $y = 3$

point of intersection $(-9, 3)$

ex① Solve the simultaneous equations using graphical method

$x + y = 1$. - - - (i)

$2x = 5 - 2y$ - - - (ii)

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

$2x + 2y = 5$ - - - (ii)

$x + y = 1$

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

x	-3	-2	-1	0	1	2	3
y	$5\frac{1}{2}$	$4\frac{1}{2}$	$3\frac{1}{2}$	$2\frac{1}{2}$	$1\frac{1}{2}$	$\frac{1}{2}$	$-\frac{1}{2}$

$\longrightarrow$ graph

(ii) $x + y = 1$

$2x + 2y = 5$

$2 \times [x + y = 1]$ - - - - (1)

$2x + 2y = 5$ - - - - (2)

Eliminate x

$$\begin{array}{r} 2x + 2y = 2 \quad \text{- - - (1)} \\ - \quad 2x + 2y = 5 \quad \text{- - - (2)} \\ \hline 0 + 0 = -3 \end{array}$$

$0 = -3$

which is not true

So the simultaneous equations have no solution ex(2) $2x - y = 5$

$3y - 6x = -15$

$2x - y = 5$

x	0	1	$2\frac{1}{2}$ or 2.5
y	-5	-3	0

$3y - 6x = -15$

x	0	1	$2\frac{1}{2}$	4
y	-5	-3	0	3

graph $\longrightarrow$

$2x - y = 5 \quad \text{--- (1)}$

$-6x + 3y = -15 \quad \text{--- (2)}$

E $3 \times [2x - y = 5] \quad \text{--- (1)}$

$1 \times [-6x + 3y = -15] \quad \text{--- (2)}$

$6x - 3y = 15 \quad \text{--- (1)}$

$+ \quad -6x + 3y = -15 \quad \text{--- (2)}$

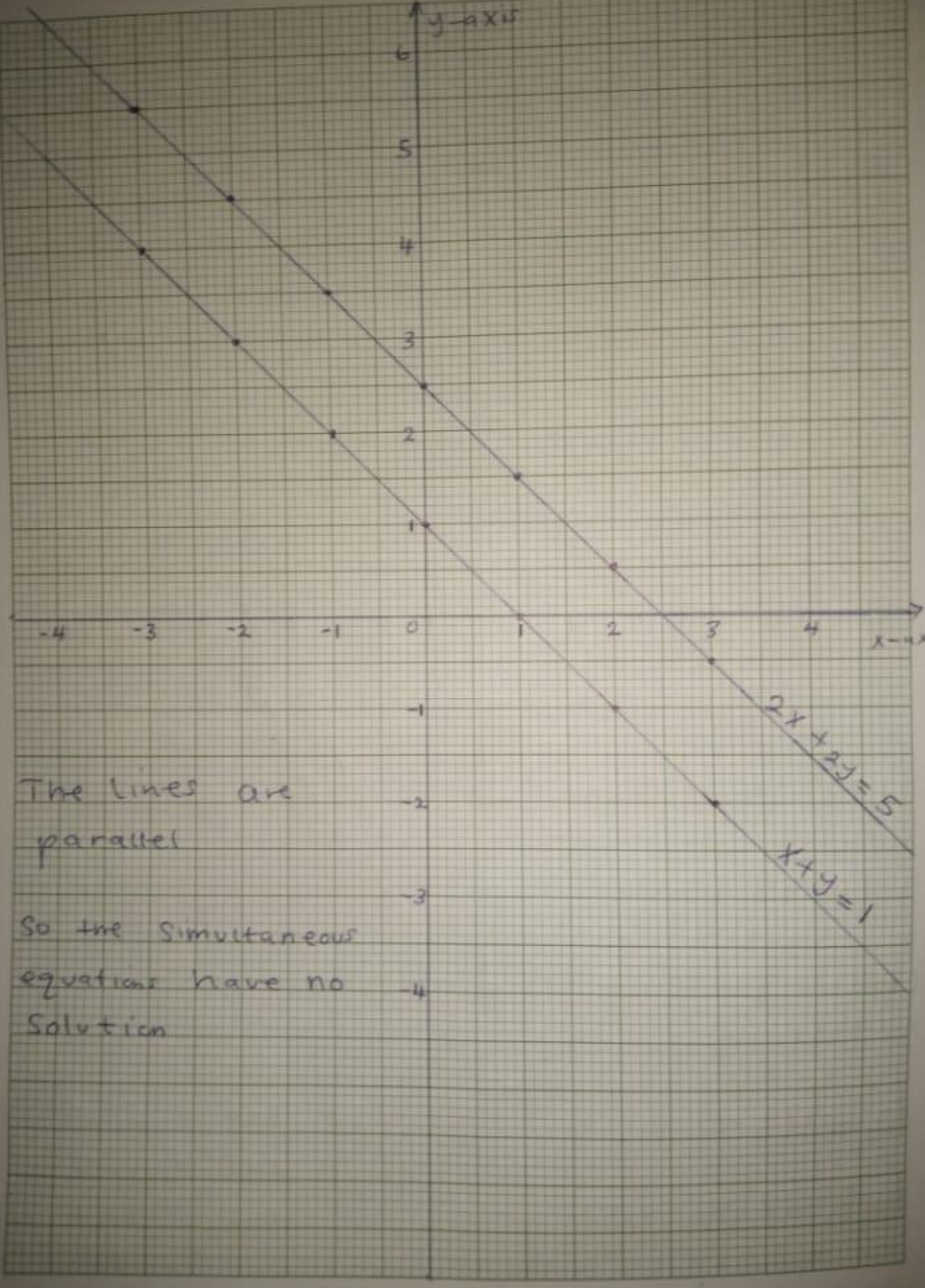
$0 + 0 = 0$

or $\begin{matrix} 3 \times \\ -1 \times \end{matrix} \begin{bmatrix} 2x - y = 5 \\ -6x + 3y = -15 \end{bmatrix} \begin{matrix} \text{--- (1)} \\ \text{--- (2)} \end{matrix}$

$6x - 3y = 15 \quad \text{--- (1)}$

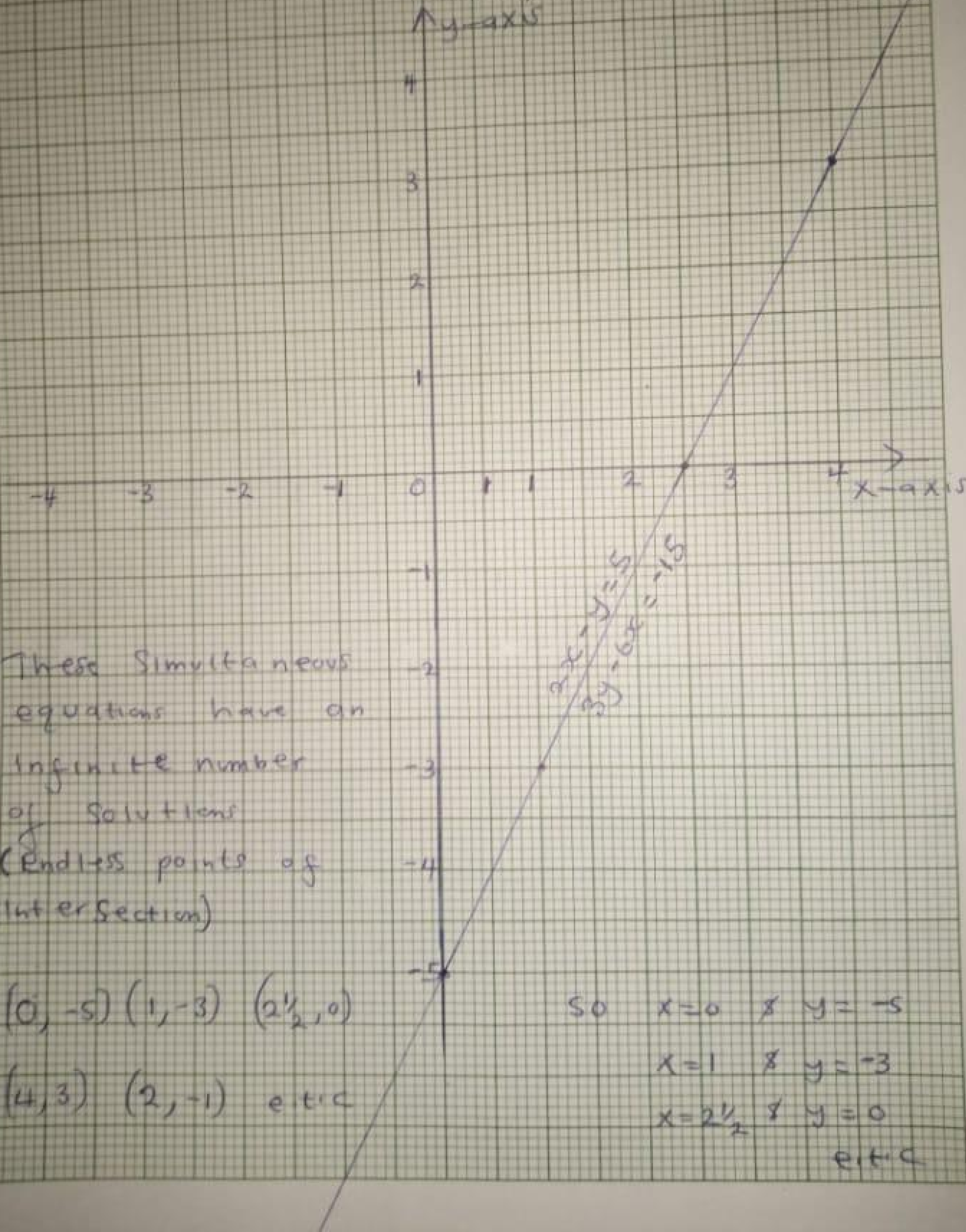
$6x - 3y = 15 \quad \text{--- (2)}$

The two equations are in fact the same equation - Every term in eqn (2) is three times the corresponding term in eqn (1). These simultaneous equations have an infinite number of solutions



The lines are parallel

So the simultaneous equations have no solution



These simultaneous equations have an infinite number of solutions (endless points of intersection)

(0, -5) (1, -3) ($2\frac{1}{2}$, 0)

(4, 3) (2, -1) e.t.c

so x = 0 & y = -5

x = 1 & y = -3

x = $2\frac{1}{2}$ & y = 0

e.t.c

MATRIX METHOD

we will look at this method in Form three after looking at matrices as a topic.

Note:

when solving simultaneous equations despite the method used, the Same answers are acquired.

~~eg~~ Take note of the 1st example we had

$x+y=3$

$x-y=11$

when we used elimination, substitution and graphical methods we got the same answers $x=7$ and $y=-4$. BUT if the method to be used is specified its the one which must be used to solve/work out the number.

USE OF SIMULTANEOUS EQUATIONS TO SOLVE PROBLEMS

ex. The sum of two numbers is 6 and their different is 4. find the numbers

One number $= x$

other number $= y$

$x+y=6$ --- (i)

$x-y=4$ --- (ii)

eliminate x

$$\begin{array}{r} x+y=6 \text{ ----- (i)} \\ -\quad x-y=4 \text{ ----- (ii)} \\ \hline 0+2y=2 \end{array}$$

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

$y=1$

put $y=1$ in eqn (1)

$$x+y=6$$
$$x+1=6$$
$$x+1-1=6-1$$
$$x=5$$

so $x=5$ & $y=1$

∴ The numbers are 5 and 1

Or using substitution method.

$$x+y=6 \quad ---- (1)$$
$$x-y=4 \quad ---- (2)$$

Make x the subject from eqn (1)

$$x+y=6$$
$$x=6-y \quad --- (3)$$

Substitute $x=6-y$ in eqn (2)

$$6-y-y=4$$
$$6-2y=4$$
$$-2y=4-6$$
$$\frac{-2y}{-2}=\frac{-2}{-2}$$
$$y=1$$

put $y=1$ in eqn (3)

$$x=6-1$$
$$x=5$$

so $x=5$ & $y=1$

∴ The numbers are 5 and 1

ex. Six pens and 12 books cost Sh. 102,000 and 4 pens and 4 books cost Sh. 48,000 Find the cost of one pen and one book.

Let the cost of a pen be a

" " " " a book be b

$$6a + 12b = 102,000 \quad --- (i)$$

$$4a + 4b = 48,000 \quad ---- (ii)$$

The equations can be even reduced if there is a number divisible by all the terms of the equation

$$\frac{6a}{6} + \frac{12b}{6} = \frac{102,000}{6}$$

$$a + 2b = 17,000 \quad --- (i)$$

$$\frac{4a}{4} + \frac{4b}{4} = \frac{48,000}{4}$$

$$a + b = 12,000 \quad --- (ii)$$

Eliminate a

$$\begin{array}{rl} a + 2b = 17,000 & --- (i) \\ - \; a + b = 12,000 & ---- (ii) \\ \hline a + b = 5,000 & \end{array}$$

$$b = 5,000$$

Put $b = 5,000$ in eqn (i)

$$a + 2 \times 5,000 = 17,000$$

$$a + 10,000 = 17,000$$

$a = 17{,}000 - 10{,}000$

$a = 7{,}000$

$\therefore$ The cost of a pen is sh. 7,000

The cost of a book is sh. 5000

ex. Obreen bought 3 books and 5 rulers at sh. 9,700 If he had bought 2 books and 8 rulers he would have spent sh. 900 less. Calculate the cost of each item.

Let the cost of a book be x

" " " " a ruler be y

$3x + 5y = 9700$

$2x + 8y = 9700 - 900$

$3x + 5y = 9700$ ---- (1)

$2x + 8y = 8800$ ---- (2)

Make y the subject from ---(2)

$2x + 8y = 8800$

$\frac{8y}{8} = \frac{8800 - 2x}{8}$

$y = \frac{8800 - 2x}{8}$ .... (3)

put $y = \frac{8800 - 2x}{8}$ in ---(1)

$$3x + 5\left(\frac{8800 - 2x}{8}\right) = 9700$$

$$8 \times 3x + 5\left(\frac{8800 - 2x}{\cancel{8}}\right) \times \cancel{8} = 9700 \times 8$$

$$24x + 44{,}000 - 10x = 77{,}600$$

$$14x = 77600 - 44{,}000$$

$$\frac{14x}{14} = \frac{33{,}600}{14}$$

$$x = 2{,}400$$

Substitute $x = 2{,}400$ in eqn (3)

$$y = \frac{8800 - 2(2{,}400)}{8}$$

$$= \frac{8800 - 4800}{8}$$

$$= \frac{4000}{8}$$

$$y = 500$$

$\therefore$ The book costs sh. 2,400 and the ruler costs sh. 500.

ex. Hayden bought 5 Sackets of washing powder and a tube of tooth paste at sh. 1,700 In January and In February he bought 15 Sackets of washing powder and 2 tubes of toothpaste at Shs. 4,400 What was the price of each item during the 2 months.

cost / price of a Sacket of washing powder = m

price of a tube of toothpaste = L

$5m + L = 1700$ --- (i)

$15m + 2L = 4,400$ --- (ii)

$2 \times [5m + L = 1700]$ --- (i)

$15m + 2L = 4400$ --- (ii)

$$\begin{array}{rl} & 10m + 2L = 3400 \quad \text{--- (i)} \\ - & 15m + 2L = 4400 \quad \text{--- (ii)} \\ \hline & -5m + 0 = -1000 \end{array}$$

$$\frac{-5m}{-5} = \frac{-1000}{-5}$$

$M = 200$

Substitute $M = 200$ in eqn (ii)

$15 \times 200 + 2L = 4,400$

$3000 + 2L = 4,400$

$2L = 4,400 - 3000$

$\frac{2L}{2} = \frac{1400}{2}$ $\quad L = 700$

∴ The price of a sacket of washing power is Shs 200 and ~~the~~ a tube of toothpaste is Shs. 700

NOTE

For this part of application (use of Simultaneous equations to solve problems (numbers)) Mainly use the elimination and Substitution methods, due to the big numbers involved.

ACTIVITY

1. Solve the Simultaneous equations using (i) elimination method

(ii) Substitution method.

(a) $x + y = 3$
$4x - 3y = 5$

(b) $5x - 2y - 1 = 0$
$3x + 2y + 9 = 0$

2. Solve the Simultaneous equations using the graphical method

$5x - y = 5$
$10x + y = -2$

3. Find the point of intersection of these Simultaneous equations $11a = -16 + 3b$
$7a + 5b = -24$

4. Obtain the Coordinates of the point of Intersection of the lines below using graphs

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

$2x - y = 5$

(b) $2x + 3y = 7$

$4x + 6y = 14$

5. Work out the Solution set of the Simultaneous equations

$2h = -7k - 11$

$4h + 14k = -22$

6. Look for two numbers whose difference is 4 and their product is also 4.

7. Marvin bought 5 tins of Jam and 3 tins of blue band from a supermarket for shs. 7,420 while maureen bought 3 tins of jam and 5 tins of blue band for Shs. 7780. How much was

(i) a tin of Jam

(ii) a tin of blueband.

8. A house wife bought 2kg of rice and 4kg of maize flow for Sh. 10,800. The next week she bought 3kg of rice and 3kg of maize flow and spent Sh. 12,600. What was the price per kg of rice and maize flow?

9. In a certain supermarket a school bag costs b shillings and a pair of shoes costs s shillings. Kato bought 3 school bags and 2 pairs of shoes at shs 103,000 and Atim bought 5 school bags and 1 pair of shoes at shs. 132,000.

Determine the cost of

(i) a school bag

(ii) a pair of shoes.

10. Samalie and Maria went to the school canteen during breaktime. Samalie spent sh. 2000 for 2 chapatis and 2 packets of pop corns while Maria spent sh. 400 more than Samalie for 3 chapatis and a packet of pop corns.

Calculate the cost of each item.

Practice makes math easier.

Our lovely daughters: wash hands

Stay home

Stay safe.

TEACHER ESTHER. M.

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