

Chapter 3 / Investigation 16

Solving systems of linear equations

Investigation 16 is to be done without using a calculator, but all the results of solving systems of linear equations can be checked on one.

Solve the following simultaneous equations.

a
$$\begin{cases} 4x + 3y = 18 \\ 7x - 4y = 13 \end{cases}$$

b
$$\begin{cases} 2x - 5y = 4 \\ -6x + 15y = 3 \end{cases}$$

c
$$\begin{cases} 10x - 4y = 3 \\ -2x + \frac{4}{5}y = -\frac{3}{5} \end{cases}$$

Press **MENU** A **EQN** to enter equation mode.

Press **F1** Simultaneous.

There are 2 unknowns so press **F1** 2.

Simultaneous
No Data In Memory

Number Of Unknowns?
2 3 4 5 6

Enter to coefficients 4, 3, 18 and 7, -4, 13 into the matrix.

$a_n X + b_n Y = C_n$

	a	b	c
1	4	3	18
2	7	-4	13

 13
 SOLVE DELETE CLEAR EDIT

Press **F1** SOLVE.

The calculator displays the solution $x = 3$ and $y = 2$

$a_n X + b_n Y = C_n$
 x 3
 y 2
 3
 REPEAT

Press **F1** REPEAT.

Press **F3** CLEAR.

$a_n X + b_n Y = C_n$

	a	b	c
1	0	0	0
2	0	0	0

 0
 SOLVE DELETE CLEAR EDIT

Enter to coefficients 2, -5, 4 and -6, 15, 3 into the matrix.

$a_n X + b_n Y = C_n$

	a	b	c
1	2	-5	4
2	-6	15	3

 3
 SOLVE DELETE CLEAR EDIT

Press **F1** SOLVE.

The calculator displays 'No Solution'.

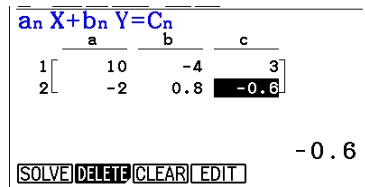
$a_n X + b_n Y = C_n$
 No Solution
 REPEAT

Chapter 3 / **Investigation 16****Solving systems of linear equations**

Press **[F1]** REPEAT.

Press **[F3]** CLEAR.

Enter to coefficients 10, -4, 3 and -2, $4 \div 5$, $-3 \div 5$ into the matrix.



Press **[F1]** SOLVE.

The solution is shown as $x = \frac{3}{10} + \frac{2}{5}y$.

There are infinitely many solutions as the lines coincide.

