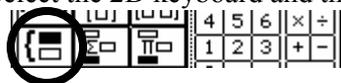


Simultaneous equations – 2 and 3 unknowns.

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Example of 2 equations and 2 unknowns.

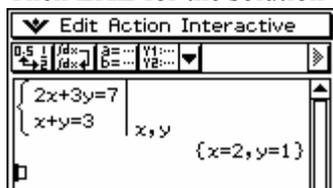
Select the 2D keyboard and then choose



Type in $2x+3y=7$ then $x+y=3$ then x,y as shown below:



Then **EXE** for the solution



Giving the solution $(x, y) = (2, 1)$

Application:

The demand for product A is related to the cost \$ x per item by a linear function given from the following figures

x	1	3	8
y	46	34	4

The supply for product A is related to the cost \$ x per item by a linear function given from the following figures

x	1	3	8
y	1	7	22

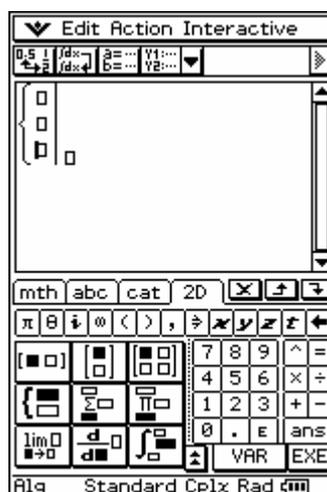
Set up a set of linear equations for determining the breakeven (equilibrium) point of supply versus demand.

Example of 3 equations and 3 unknowns

Select the 2D keyboard and then choose the picture

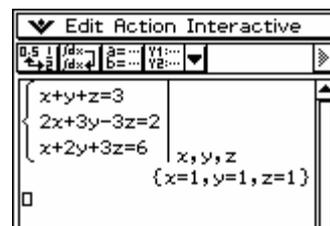
twice. $\left\{ \begin{array}{l} \square \\ \square \end{array} \right.$

This changes from 2 equations to 3 equations.



Solve

$$\begin{aligned} x + y + z &= 3 \\ 2x + 3y - 3z &= 2 \\ x + 2y + 3z &= 6 \end{aligned}$$



Yielding the solution $(x, y, z) = (1, 1, 1)$

Application:

1. In a card game, players take turns to pick up and put down cards.

Each card held in a particular suit scores a certain number of penalty points depending on the suit (hearts, spades or diamonds – clubs do not have any penalty points).

A player's penalty is found by adding the number of points for the cards held.

A particular game ended as follows:

- player A held 2 hearts, 1 diamond and 3 spades and has 34 penalty points
- player B held 1 heart, 4 diamonds and 5 spades and has 45 penalty points
- player C held 3 hearts, 2 diamonds and 1 spade and has 43 penalty points.

Set up and solve a system of equations to find the number of penalty points the cards in each suit receives.

2. Attempt to solve the system of equations

$$2x - y + 3z = 17$$

$$x + 2y - z = -4$$

$3x + y + 2z = 10$ and explain the nature of the equations.

Give a geometrical interpretation of the result.

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