

# [System of linear equations slp 3](https://assignbuster.com/system-of-linear-equations-slp-3/)

System of Linear Equations A system of linear equations allows us to solve for variable by the addition of more information (additional equations). Foe example, if we eat in a fast food restaurant and we order 4 cheeseburgers and 3 orders of French fries, and the bill comes to $18, the linear equation would be 4X + 3Y = 18 where X = cost of a cheeseburger   
Y = cost of French fries   
$18 = total cost   
However, there is not enough information to determine the cost of each cheeseburger, or an order of fries. In fact, theoretically there are an infinite number of solutions. However, if we return to the same restaurant and order 3 cheeseburgers and 5 orders of fries the bill comes to $19. The equation would be 3X + 5Y = 19. We now have enough information to solve the system of linear equations   
1. 4X + 3Y = 18   
2. 3X + 5Y = 19 solve equation #1 for X in terms of Y   
4X + 3Y = 18   
4X = 18 - 3Y   
X = (18-3Y) / 4   
X = 4. 5 -. 75Y   
Substitute this value for X in equation #2   
3X + 5Y = 19   
3( 4. 5 - . 75Y) +5Y = 19   
13. 5 –2. 25Y + 5Y = 19   
13. 5 + 2. 75Y = 19   
2. 75Y = 5. 5   
Y = 2   
The equations can now be solved using Y = 2   
4X + 6 = 18, 4X = 12, X = 3   
Cheeseburgers are $3. 00 and French Fries are $2. 00   
Checking equation #2, (3\*3) + (5\*2) = 19   
As shown in the graph of the two equations, each equation is a graph that has an infinite number of points. However, there is only one unique point where the lines intercept. That point is at X= 3 and Y= 2.