How do you solve a system of equations in Excel?

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Solving a system of equations in Excel involves using the program's built-in functions and tools to find the values of multiple variables that satisfy a set of equations. This is done by inputting the equations into the program, setting up a system of cells and formulas to represent the variables, and then using the solver function to iterate through different values until a solution is found. Excel's ability to handle complex mathematical calculations and its user-friendly interface make it a convenient and effective tool for solving systems of equations.

Solve a System of Equations in Excel (3 Examples)

To solve a system of equations in Excel, we can use the MMULT and MINVERSE functions.

The following examples show how to use these functions to solve several different systems of equations in Excel.

Example 1: Solve System of Equations with Two Variables

Suppose we have the following system of equations and we'd like to solve for the values of x and y:

5x + 4y = 35

2x + 6y = 36

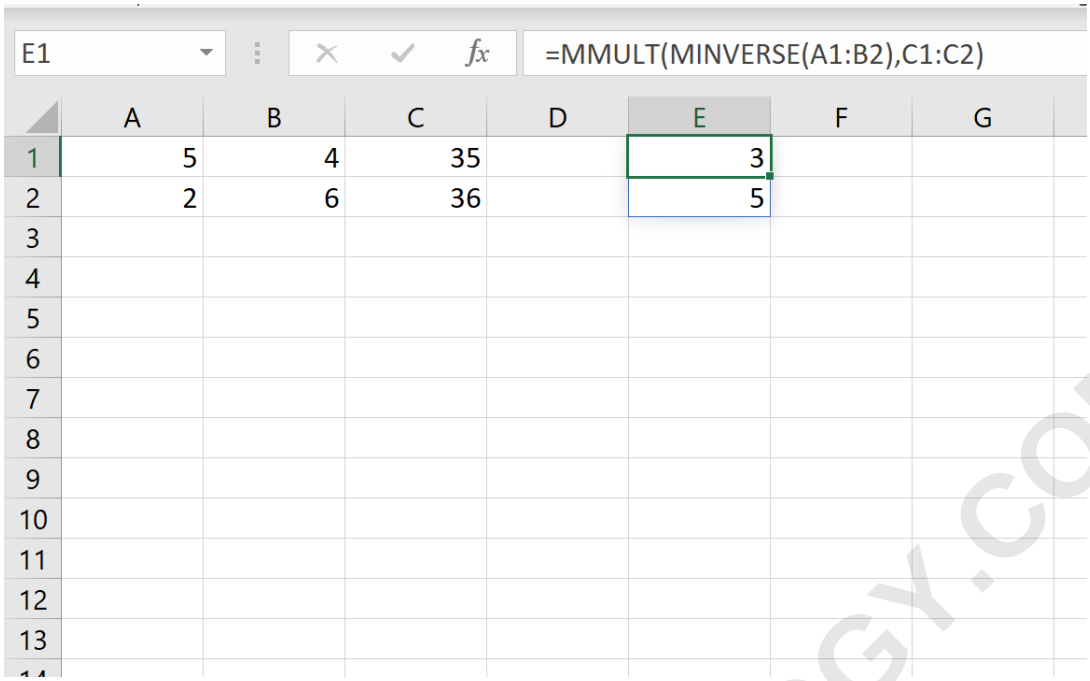
To solve this system of equations, we can first type in the following values in Excel:

	A	B	C	D	E	F	G
1	5	4	35				
2	2	6	36				
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

We can then use the following formula to solve for the values of x and y:

=MMULT(MINVERSE(A1:B2),C1:C2)

We can type this formula into cell E1 and then press CTRL + SHIFT + ENTER:



This tells us that the value for x is 3 and the value for y is 5.

Example 2: Solve System of Equations with Three Variables

Suppose we have the following system of equations and we'd like to solve for the values of x, y, and z:

4x + 2y + 1z = 34

3x + 5y - 2z = 41

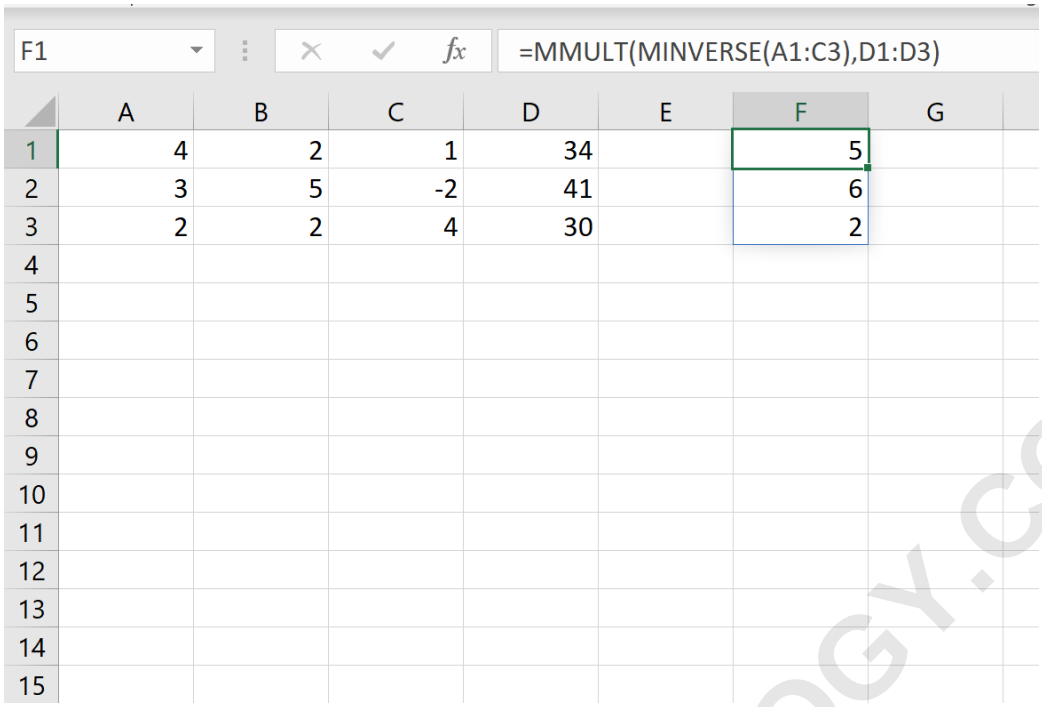
To solve this system of equations, we can first type in the following values in Excel:

	A	B	C	D	E	F	G
1	4	2	1	34			
2	3	5	-2	41			
3	2	2	4	30			
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

We can then use the following formula to solve for the values of x, y, and z:

=MMULT(MINVERSE(A1:C3),D1:D3)

We can type this formula into cell F1 and then press CTRL + SHIFT + ENTER:



This tells us that the value for x is 5,the value for y is 6, and the value for z is 2.

Example 3: Solve System of Equations with Four Variables

Suppose we have the following system of equations and we'd like to solve for the values of w, x, y, and z:

6w + 2x + 2y + 1z = 37

2w + 1x + 1y + 0z = 14

3w + 2x + 2y + 4z = 28

2w + 0x + 5y + 5z = 28

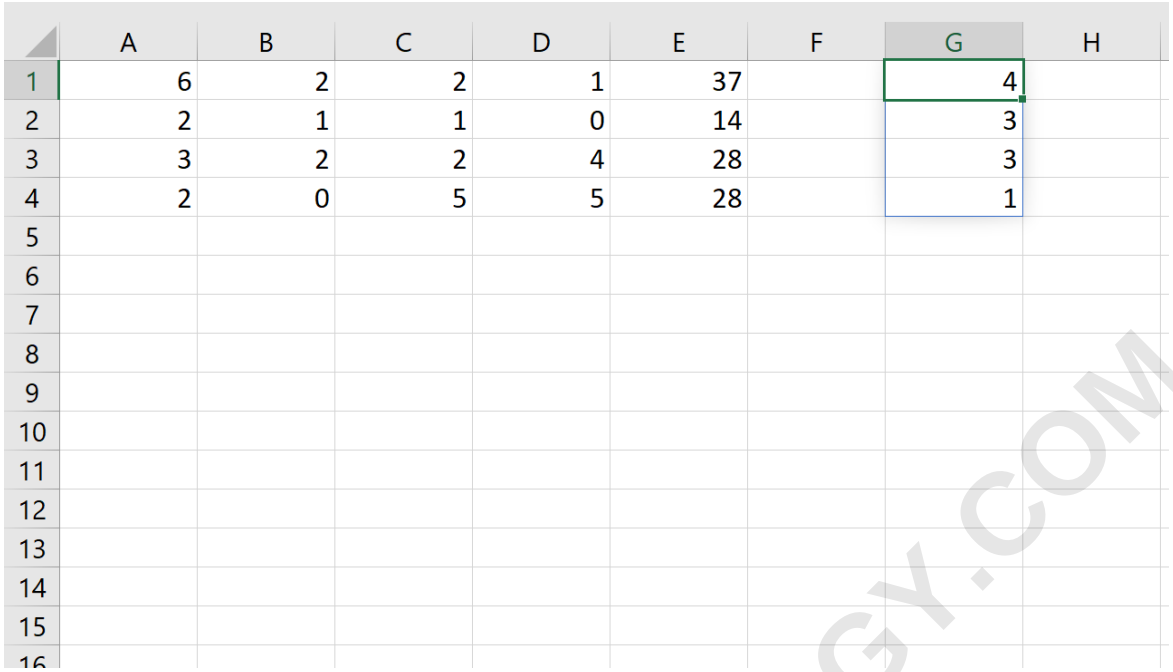
To solve this system of equations, we can first type in the following values in Excel:

	A	B	C	D	E	F	G
1	6	2	2	1	37		
2	2	1	1	0	14		
3	3	2	2	4	28		
4	2	0	5	5	28		
5							
6							
7							
8							
9							
10							
11							
12							
13							
14							
15							

We can then use the following formula to solve for the values of w, x, y, and z:

=MMULT(MINVERSE(A1:D4),E1:E4)

We can type this formula into cell G1 and then press CTRL + SHIFT + ENTER:



	A	B	C	D	E	F	G	H
1	6	2	2	1	37		4	
2	2	1	1	0	14		3	
3	3	2	2	4	28		3	
4	2	0	5	5	28		1	
5								
6								
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This tells us that the value for w is 4, x is 3, y is 3, and z is 1.

The following tutorials explain how to perform other common operations in Excel: