

Solving System by Elimination Method continued...

Most of the time the systems aren't set up as nicely as what you had before. You'll usually have to do something before you can eliminate.

Look at this one:

$$\begin{aligned} 3x - 4y &= -5 \\ 5x - 2y &= -6 \end{aligned}$$

If we just add straight down, nothing's going to eliminate and we'll just get a mess. But, check out the y guys:

$$\begin{aligned} \downarrow \\ 3x - 4y &= -5 \\ 5x - 2y &= -6 \\ \uparrow \end{aligned}$$

If we could make this a $+4y$, the y's would eliminate...

So, let's do it! We can multiply an equation by a number... So, let's multiply the second equation by a -2 :

$$\begin{aligned} 3x - 4y &= -5 \\ -2(5x - 2y) &= -6 \end{aligned} \rightarrow \begin{array}{r} 3x - 4y = -5 \\ -10x + 4y = 12 \\ \hline -7x + 0 = 7 \\ -7x = 7 \\ x = -1 \end{array}$$

Remember to distribute!

Now, stick the x guy into either of the original equations. I'm going to go for the first one:

$$\begin{aligned} x &= -1 \\ 3x - 4y &= -5 \\ 3(-1) - 4y &= -5 \\ -3 - 4y &= -5 \\ -4y &= -2 \\ y &= \frac{1}{2} \end{aligned}$$

The answer is $(-1, \frac{1}{2})$

Check it - and don't let that fraction freak you... These things happen!

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Okay, let's try some!

1. $6x + 5y = 19$
 $2x + 3y = 5$

2. $2x + y = -9$
 $4x + 11y = 9$

3. $2x - 3y = -6$
 $-5x - 9y = 15$

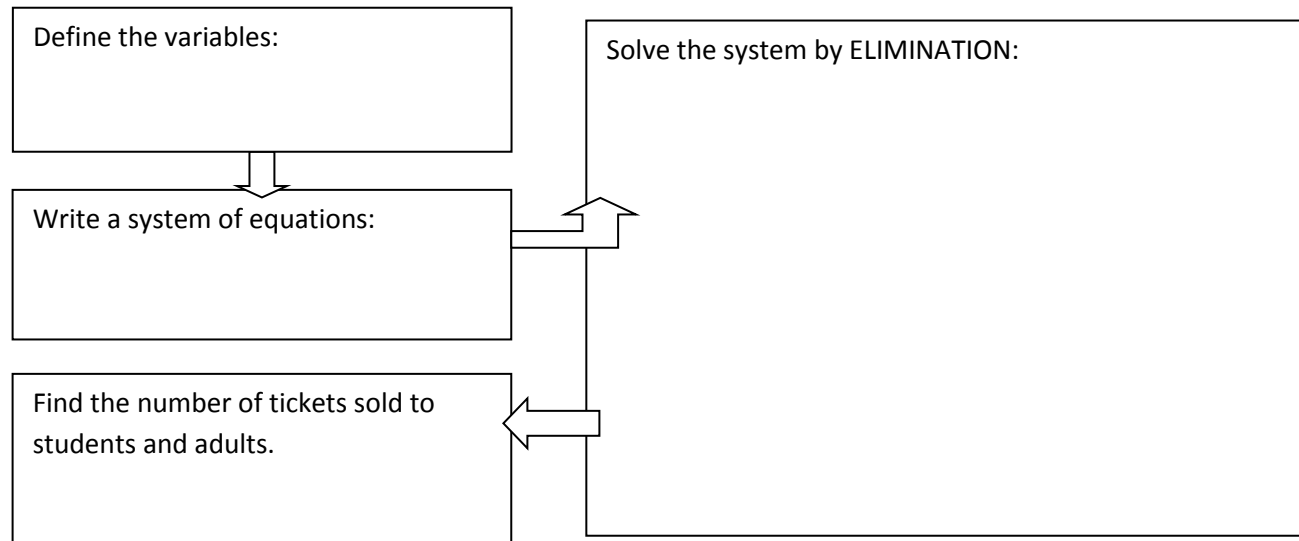
4. $7x - 6y = -1$
 $5x - 4y = 1$

5. $3x + 2y = 4$
 $2y = 8 - 5x$

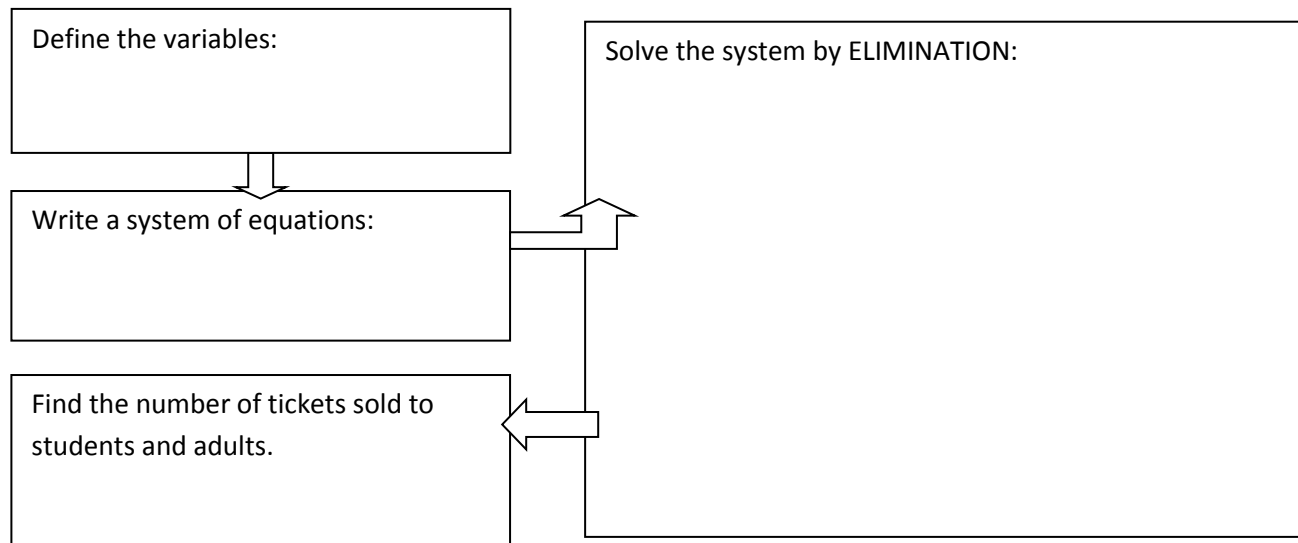
You Try!
6. $6x + 8y = 26$
 $-7x + 2y = -19$

Solving System by Elimination Method continued...

1. Tickets for admission to a high school football game cost \$3 for students and \$5 for adults. During one game, \$2995 was collected from the sale of 729 tickets. Find the number of tickets sold to students and the number of tickets sold to adults.



2. A website allows users to download individual songs or an entire album. All individual songs cost the same to download, and all albums cost the same to download. Ryan pays \$14.94 to download 5 individual songs and one album. Seth pays \$22.95 to download 3 individual songs and two albums. How much does the website charge to down an individual song?



3. You try! ☺ The students in the graduating class at Heritage, Wakefield and Wake-Forest Rolesville have to pay for their caps and gowns. A cap-and-gown set costs x dollars, and an extra tassel costs y dollars. At Heritage, students pay \$3262 for 215 cap-and-gown sets and 72 extra tassels. At Wakefield, students pay \$3346 for 221 cap-and-gown sets and 72 extra tassels.
- How much does the cap and gown set cost?
 - How much does it cost for the extra tassels?
 - How much will students at Wake-Forest Rolesville pay for 218 cap-and-gown sets and 56 extra tassels?