Name: _____ Date: <u>Dec 3&4&5</u> Hour: __Alg 1____

Unit 4 Day 3 and 4: Graphing Linear Equations Project

Focus Question: How do I combine everything I've learned to solve several questions all at one time?

When two (or more) equations are related to the same situation and combined into one problem, the problem is called a **system**. The coordinates of the intersection point satisfy both equations. These coordinates are the **solution of the system**.

The solution to a system makes <u>both equations true when substituted.</u>

A. Example

At a school band concert, Christopher and Celine sell memberships for the band's booster club. An adult membership costs $10 and a student membership costs $5. At the end of the evening, the students had sold 50 memberships for a total of $400. The club president asked how many were student memberships.

1. Define what variables you will use. (Tell me your letters & what they stand for)

x: # of student memberships

y: # of adult memberships

2. Write a **system** of equations that fits your situation.

$$5x + 10y = 400 \qquad x + y = 50$$

3. Graph the two equations from Question 2 using any method you want. Does it matter which variable goes on which axis? Explain.
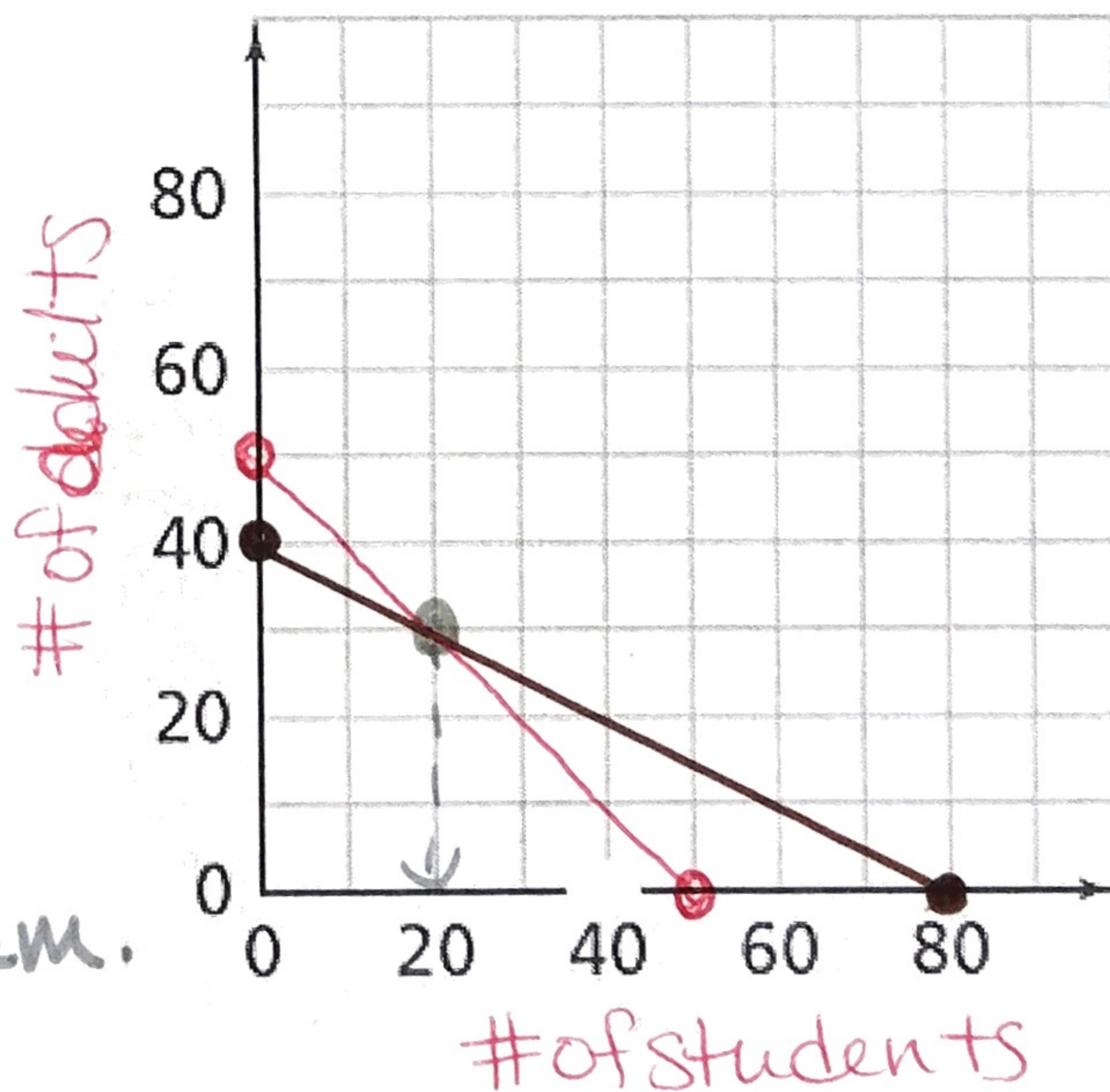
No, they both could be indep.

4. What are the coordinates of the intersection point?

(<u>20</u> , <u>30</u>)

4. What do the numbers tell you about the numbers of adult and student memberships sold?

They sold 20 student mem. & 30 adult mem.

5. How should Christopher and Celine answer the club president?

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B. Your Turn:

Each group will be given a situation and questions to answer about that situation. You will present your graph and answers tomorrow.

Each group must create a large poster sized graph that does all of the following:

You are STRONGLY encouraged to do these IN ORDER (it will save you a lot of time and work).

1) Identifies your variables
2) Gives the equations that you are graphing.
3) Gives the *realistic domain* of the situation and what it represents.
4) Gives the *realistic range* of the situation and what it represents.
5) Displays a good graph of your situation.
6) Gives the y-intercepts and what they represent
7) Answers the questions asked about the situation in complete sentences and indicates how to find them on the graph.

You should use the rest of this page for scratch work.