Warm Up

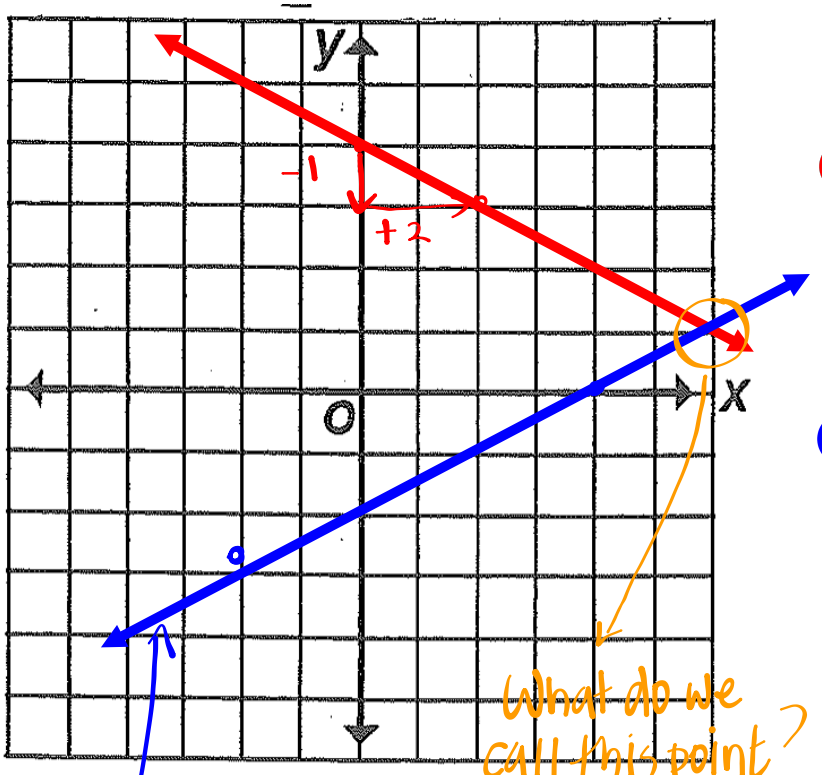
Graph the following on the same graph:

(Use the grid I give you, and then glue it in your notebook)

$$y = \frac{-1}{2}x + 4$$

$$2x - 4y = 8$$

Do the lines cross?



- $y = \frac{-1}{2}x + 4$

slope — y-int

- $2x - 4y = 8$

$2x - 4(0) = 8$

$\frac{2x}{2} = \frac{8}{2}$

$x = 4$

What do we call this point?

COMMON SOLUTION

every point on this line is a 'solution' for $2x - 4y = 8$

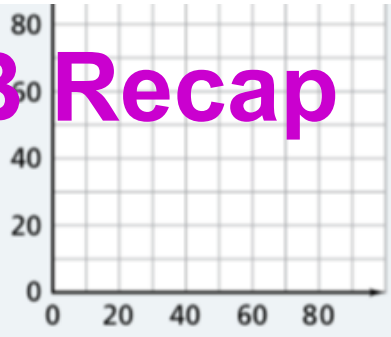
$2(0) - 4y = 8$

$\frac{-4y}{-4} = \frac{8}{-4}$

$y = -2$

1.3 A and B Recap

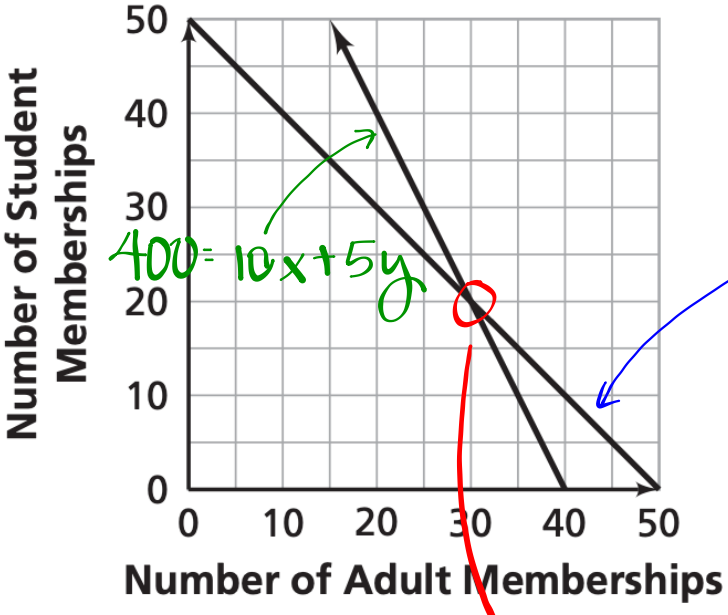
Question A on a grid like the one at the right. Does it matter which variable goes on which axis? Explain.



2. Determine the coordinates of the intersection point. Explain what the coordinates tell you about the numbers of adult and student memberships sold.

3. Could there be a common solution for the two equations that is *not* shown on your graph?

Units that are similar



$400 = 10x + 5y$

$x + y = 50$

common solution

(30, 20)

# of adult memberships

# of student memberships

For 30 adult memberships and 20 student memb.

50 total memberships sold

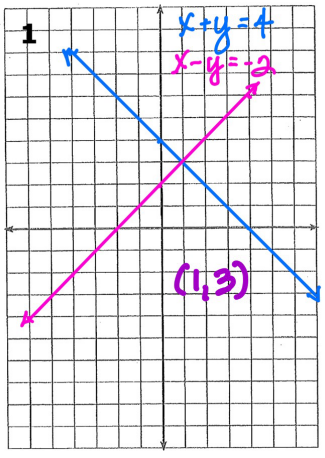
$400 was collected

C Use graphic or symbolic methods to solve each system of linear equations. Check your answer.

1. $x + y = 4$ and $x - y = -2$
2. $2x + y = -1$ and $x - 2y = 7$
3. $-2x + y = 3$ and $-4x + 2y = 6$
4. $-2x + y = 3$ and $-4x + 2y = 10$

Problem 1.3 C

1



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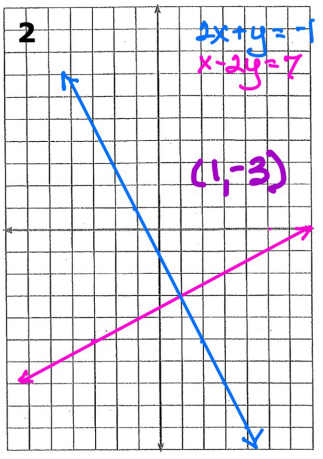
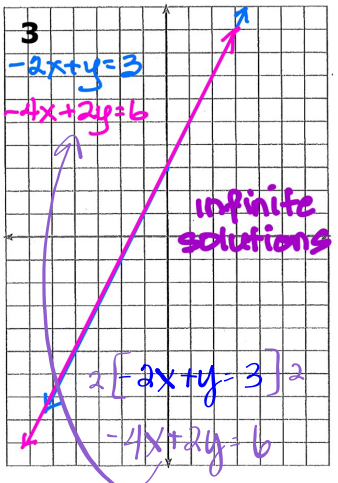
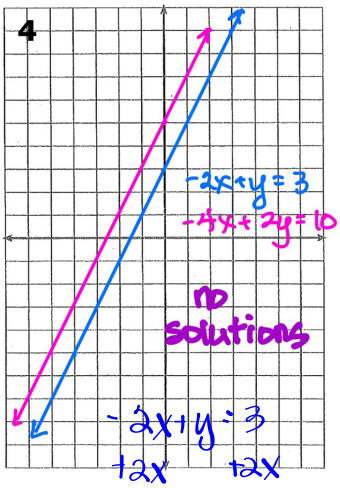


3



same equation

4



$-2x+y=3$

$+2x \quad +2x$

$y = 2x+3$

$-4x+2y=10$

$+4x \quad +4x$

$\frac{2y}{2} = \frac{4x}{2} + \frac{10}{2}$

$y = 2x+5$

Parallel lines

slopes are equal

y intercepts different

How do we write equations from a word problem?

Remember to read the problem 3 times!

For each problem:

- Define your variables (Let x = , and Let y =)
- Write your equations (are there some totals involving both variables?)
- Use Desmos to solve your system of equations
- What does your solution mean in the context of the problem?

1. A theater production charges $21 for adult tickets and $15 for student tickets. If the production sold 102 tickets for its opening night and made $1,932 in ticket sales, how many of each type of ticket were sold?

2. The player of a trivia game receives 100 points for each correct answer and loses 25 points for each incorrect answer. Leona answered a total of 30 questions and scored a total of 2125 points. How many questions did she answer correctly?

3. At a restaurant the cost for a breakfast taco and a small glass of milk is $2.10. The cost for 2 tacos and 3 small glasses of milk is $5.15. How much does a breakfast taco cost? How much does a small glass of milk cost?

4. The Frosty Ice Cream Shop sells sundaes for $2 and banana splits for $3. On a hot summer day, the shop sold 8 more sundaes than banana splits and made $156. How many banana splits did they sell?

Read 1: What is the problem about?

(general idea, no numbers needed)

1. A theater production charges $21 for adult tickets and $15 for student tickets. If the production sold 102 tickets for its opening night and made $1,932 in ticket sales, how many of each type of ticket were sold?

Read 2: What do we need to find?

(this helps us define our variables!)

1. A theater production charges $21 for adult tickets and $15 for student tickets. If the production sold 102 tickets for its opening night and made $1,932 in ticket sales, how many of each type of ticket were sold?

Let x = # of adult tickets

Let y = # of student tickets

Read 3: What are the important #'s?

look for Totals!

1. A theater production charges $21 for adult tickets and $15 for student tickets. If the production sold 102 tickets for its opening night and made $1,932 in ticket sales, how many of each type of ticket were sold?

Let x = # of adult tickets
Let y = # of student tickets

total # of tickets

total $1,932 collected

Each of the totals represents one of our equations.

$102 = x + y$ $\quad x + y = 102$

$1932 = 21x + 15y$

$$\begin{cases} x + y = 102 \\ 21x + 15y = 1932 \end{cases}$$

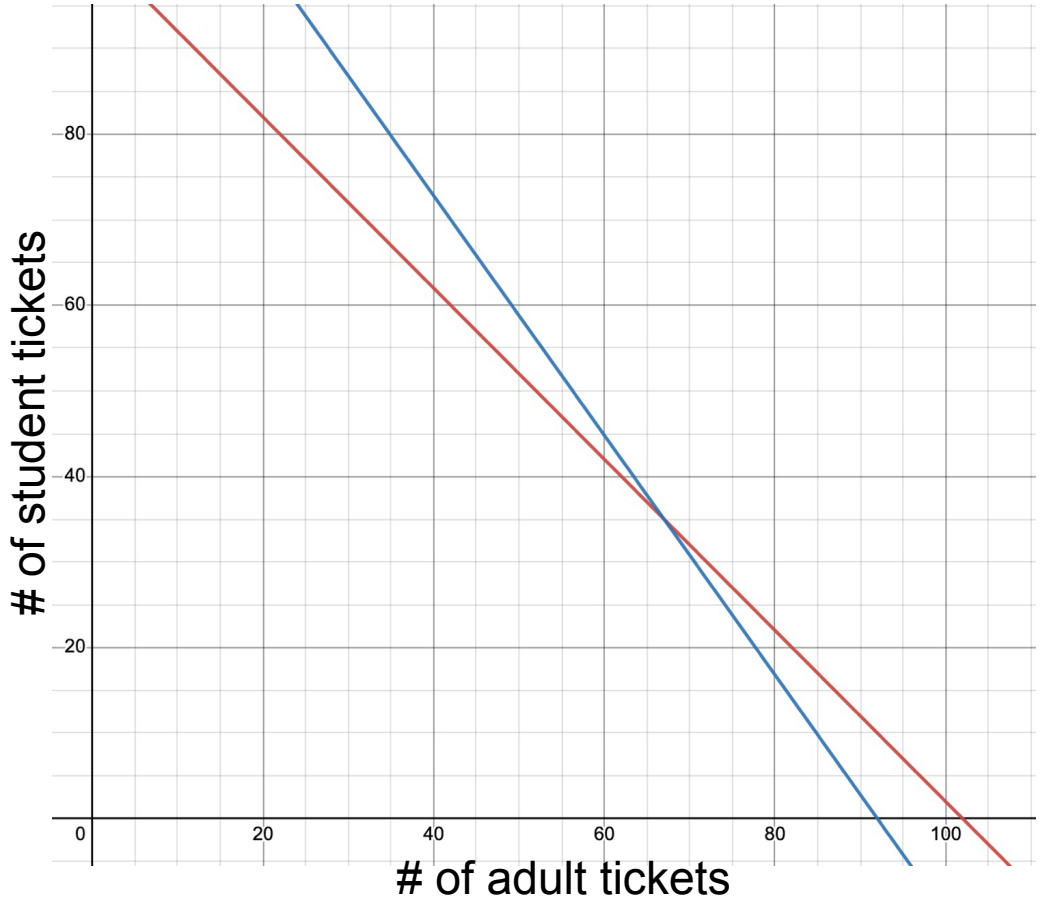
We now have two equations that describe this situation. They are called a

System of Equations.

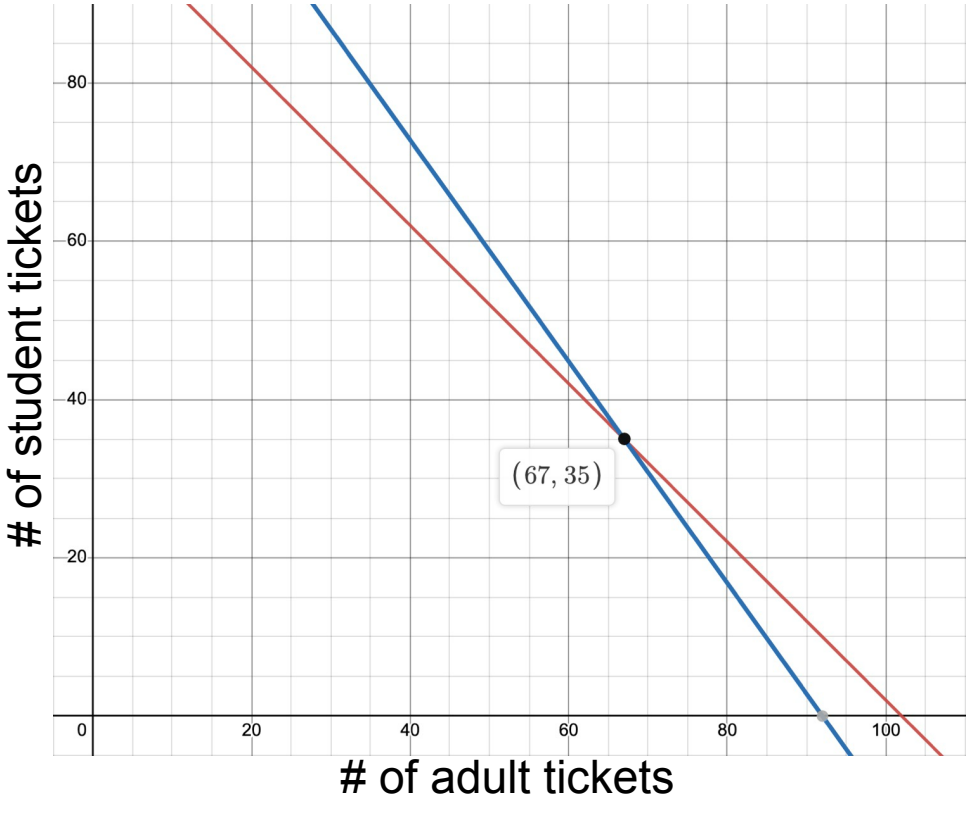
$$\begin{cases} x + y = 102 \\ 21x + 15y = 1932 \end{cases}$$

Let's graph our system of equations using Desmos:

$$\begin{cases} x + y = 102 \\ 21x + 15y = 1932 \end{cases}$$



Have Desmos tell you the common solution.



Homework

Finish classwork