

Warm Up

2/28

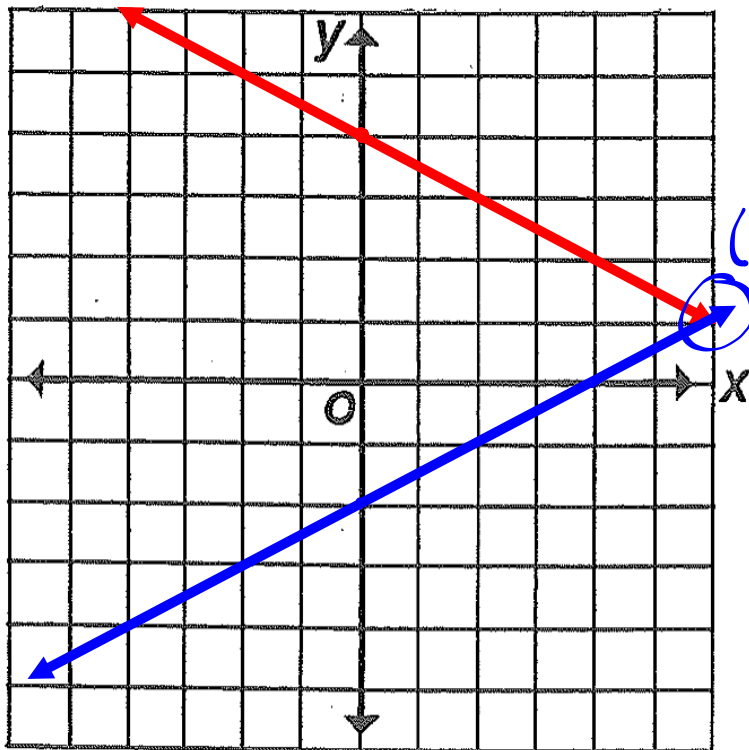
Graph the following on the same graph:

(Use one of the graphs on the back of the sheet from last night's homework.)

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

$$2x - 4y = 8$$

Do the lines cross?



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

$$(6, 1) \quad \frac{\Delta y}{\Delta x} = \frac{-1}{2}$$

$$2x - 4y = 8$$

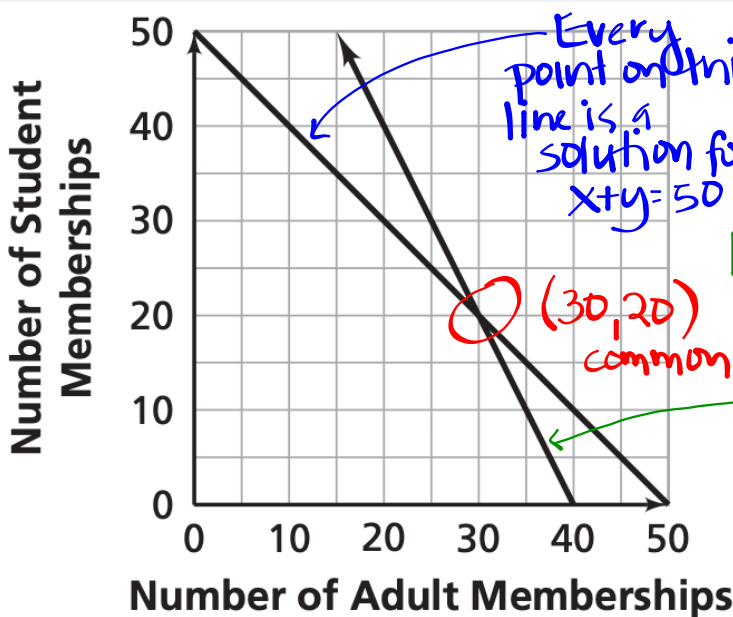
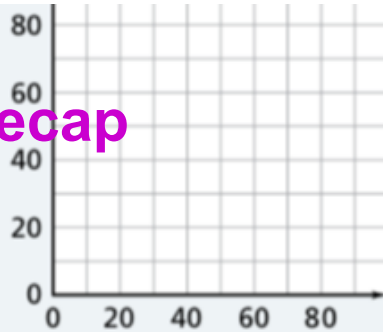
$$\begin{array}{r} 0 - 4y = \frac{8}{-4} \\ \hline y = -2 \quad (0, -2) \end{array}$$

$$\begin{array}{r} 2x - 0 = \frac{8}{2} \\ \hline x = 4 \quad (4, 0) \end{array}$$

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

1.3 A and B Recap

- Determine the coordinates of the intersection point. Explain what the coordinates tell you about the numbers of adult and student memberships sold.
- Could there be a common solution for the two equations that is *not* shown on your graph?



Units that are similar

$$x + y = 50$$

$$10x + 5y = 400$$

Every point is a solution for

What does $(30, 20)$ represent?
 x, y

30 adult memberships } Total of 50 memberships
 20 student memberships } \$400 dollars made

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

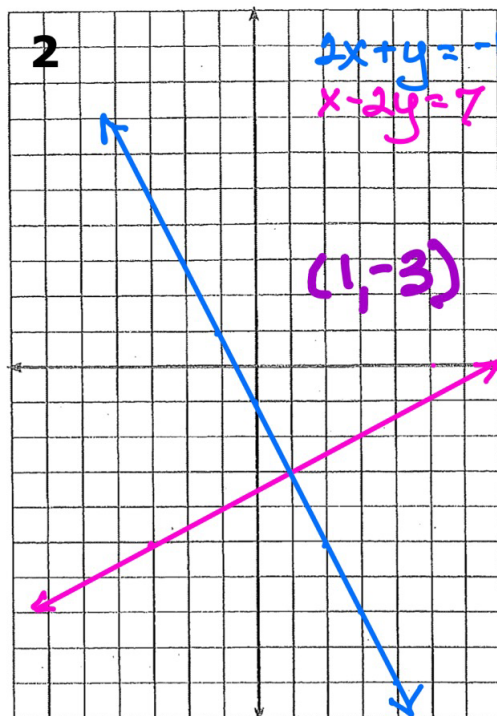
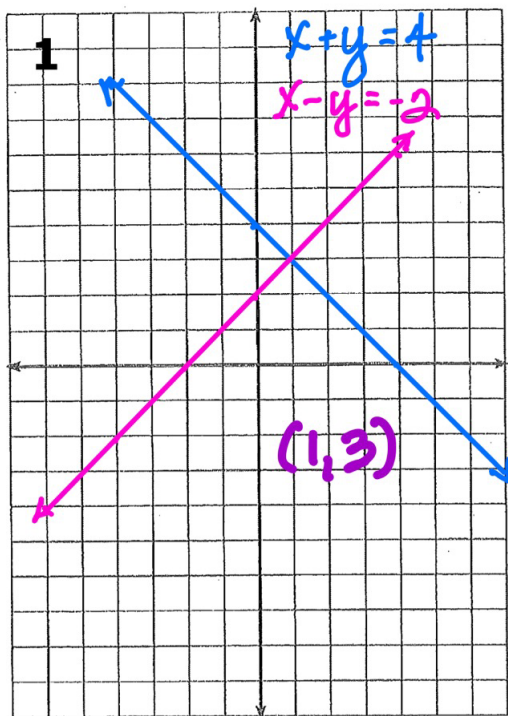
1. $x + y = 4$ and $x - y = -2$

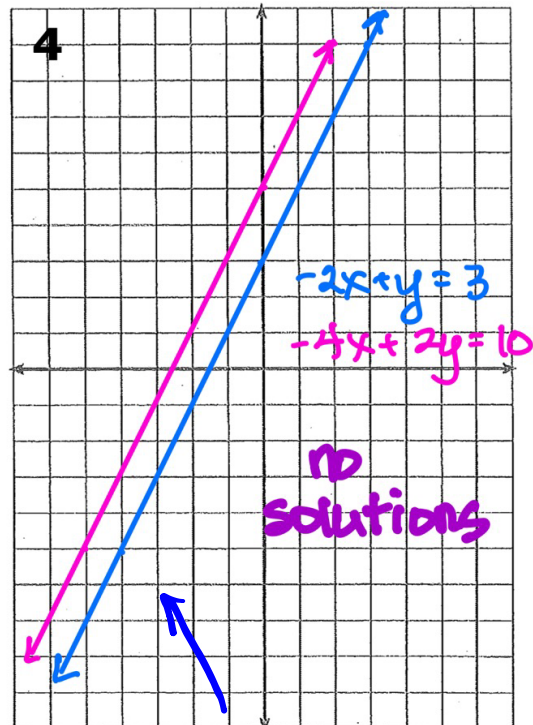
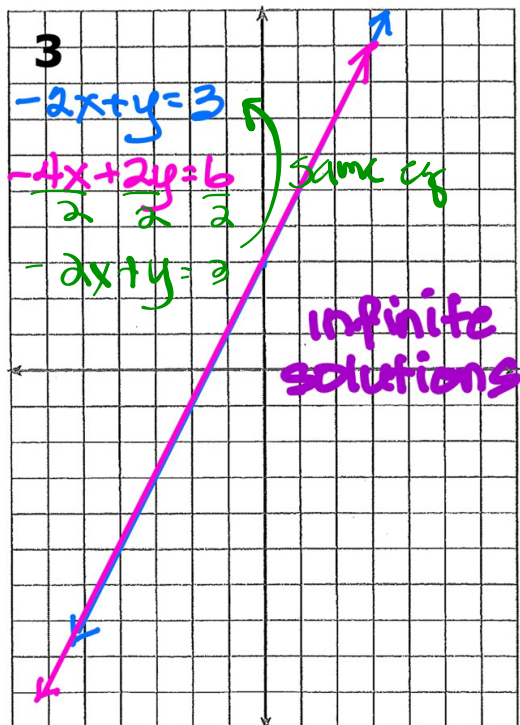
2. $2x + y = -1$ and $x - 2y = 7$

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

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

Problem 1.3 C





Parallel Lines, never intersect

Parallel Lines have the same slope (different y-ints)

$$\begin{array}{r} -2x + y = 3 \\ +2x + 2x \\ \hline y = 2x + 3 \end{array}$$

$$\begin{array}{r} -4x + 2y = 10 \\ +4x + 4x \\ \hline 2y = 4x + 10 \\ \frac{2y}{2} = \frac{4x}{2} + \frac{10}{2} \\ y = 2x + 5 \end{array}$$

same slope

How do we write equations
from a word problem?

Remember to read the problem 3
times!

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

↖ This tells us
what our variables
are.

Read 3: What are the important #'s?

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? total total

Let x = # of adult tickets

Let y = # of student tickets

System of Eq's

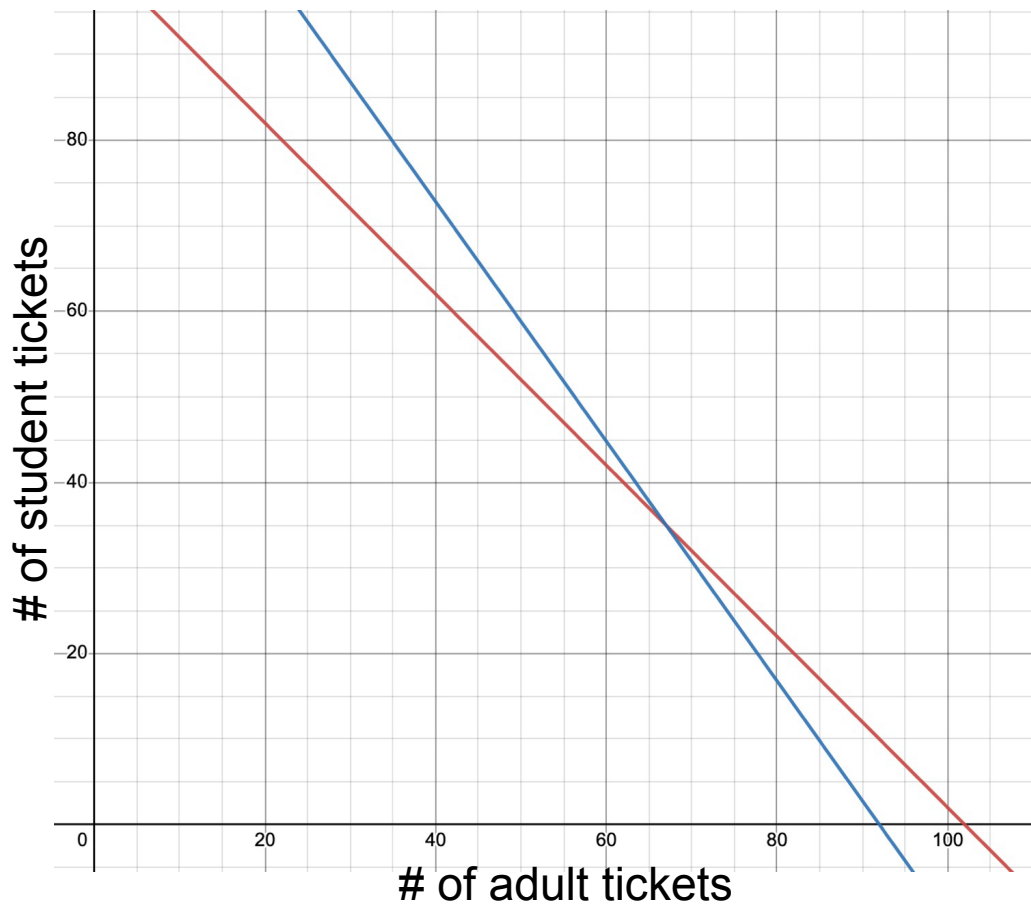
$$\begin{cases} 21x + 15y = 1932 \\ x + y = 102 \end{cases}$$

We now have two equations that describe this situation. They are called a **System of Equations.**

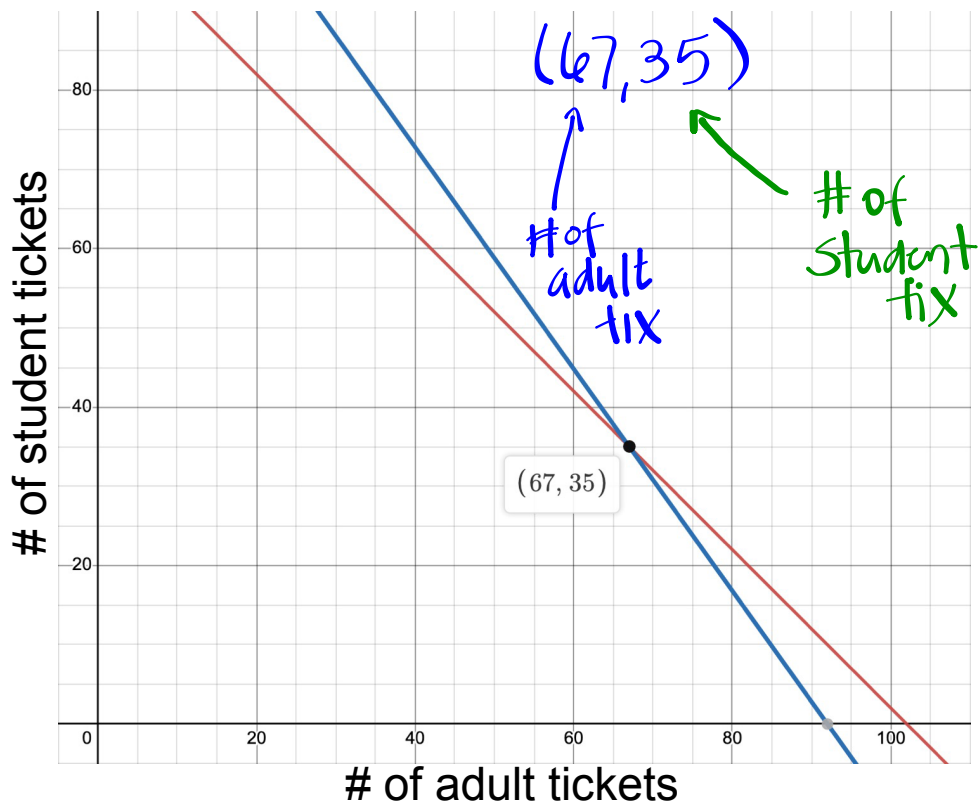
$$\begin{cases} x + y = 102 \\ 21x + 15y = 1932 \end{cases}$$

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.
(tap the graph where the lines cross)



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?

Homework

Finish classwork