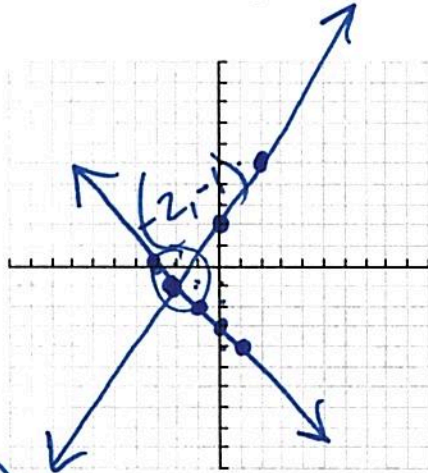


Graph the following lines to find where they intersect each other.

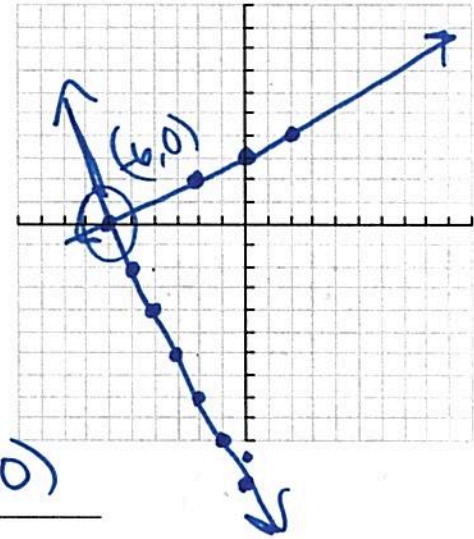
This is the solution to the system of equations.

1.
$$\begin{cases} y = \frac{3}{2}x + 2 \\ y = -x - 3 \end{cases}$$



Answer: $(-2, -1)$

2.
$$\begin{cases} y = \frac{1}{2}x + 3 \\ y = -2x - 12 \end{cases}$$



Answer: $(-6, 0)$

✂ Use your calculator to find the solution to the following systems of equations.

Calculator Info:
 → Plug into $y =$
 → graph it
 → $\boxed{2nd} \boxed{Calc} \rightarrow \# 5$ Intersection

Transform the following equations into $y = mx + b$ form (slope-intercept form) **SHOW YOUR WORK**, and then graph by hand to determine the solution.

3.
$$\begin{cases} 5x - 4y = 26 \\ 2x + y = 7 \end{cases}$$

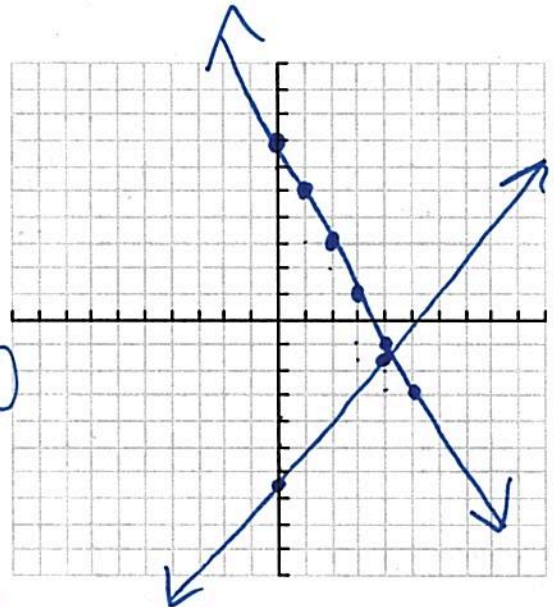
$$\begin{array}{r} 5x - 4y = 26 \\ -5x = -5x \\ \hline - 4y = + 26 \end{array}$$

$$\frac{-4y}{-4} = \frac{-5x + 26}{-4} \quad \frac{-4}{-4}$$

$$y = \frac{5}{4}x - 6.5$$

$$y = -2x + 7$$

$$(4.15, -1.30)$$



$$1. \frac{y_2 - y_1}{x_2 - x_1}$$

$$2. y = mx + b$$

SYSTEMS OF EQUATIONS: SUBSTITUTION METHOD

For each table write an equation in slope-intercept form. Then solve the system. (By Hand)

4.

x	y
0	-30
2	-26
4	-22

x	y
-2	5
0	3
2	1

5.

x	y
0	5
2	7
4	9

x	y
-2	0
0	-2
2	-4

$$\textcircled{1} y = 2x - 30$$

$$\textcircled{2} y = -x + 3$$

Solution: $(11, -8)$

$$\textcircled{1} y = 2(0) + b$$

$$-30 = 0 + b$$

$$b = -30$$

$$\frac{-26 - (-30)}{2 - 0} = \frac{4}{2} = 2$$

$$\frac{3 - 5}{0 - (-2)} = \frac{-2}{2} = -1$$

$$y = x + 5$$

$$y = -x - 2$$

Solution: $(-7/2, 3/2)$

$$\begin{array}{r} x + 5 = -x - 2 \\ + x - 5 \quad + x - 5 \\ \hline 2x = -7 \end{array}$$

$$\begin{array}{l} x = -7/2 \\ y = \frac{-7}{2} + 5 \\ = 3/2 \end{array}$$

SYSTEMS OF EQUATIONS: ELIMINATION METHOD

6. Liam's bookstore sold 40 notebooks and 20 newspapers for a total of \$~~260~~²⁶⁰. A day later, the bookstore sold ~~8~~⁸ Notebooks and ~~2~~² Newspapers at the same prices for a total of \$~~46~~⁴⁶. How much does a notebook and newspaper cost at Liam's bookstore.

x - Notebooks

y - Newspapers

$$(5, 3)$$

$$40x + 20y = 260$$

$$-10(8x + 2y = 46)$$

$$-80x - 20y = -460$$

$$+ 40x + 20y = 260$$

$$-40x = -200 \quad |x = 5$$

$$8(5) + 2y = 46$$

$$40 + 2y = 46$$

$$-40 \quad -40$$

$$2y = 6 \quad |y = 3$$

7. You are in a Parisian café with a friend. A local in front of you buys a cup of coffee and a croissant for 5.30 Euro. When you and your friend get 2 cups of coffee and ~~3~~³ croissants, you are charged ~~13.60~~^{13.60} Euro. What is the price for a cup of coffee and a croissant?

x = coffee

y = Croissants

$$-2(x + y = 5.30)$$

$$2x + 3y = 13.60$$

$$-2x - 2y = -10.60$$

$$y = 3.00$$

$$x + 3 = 5.30$$

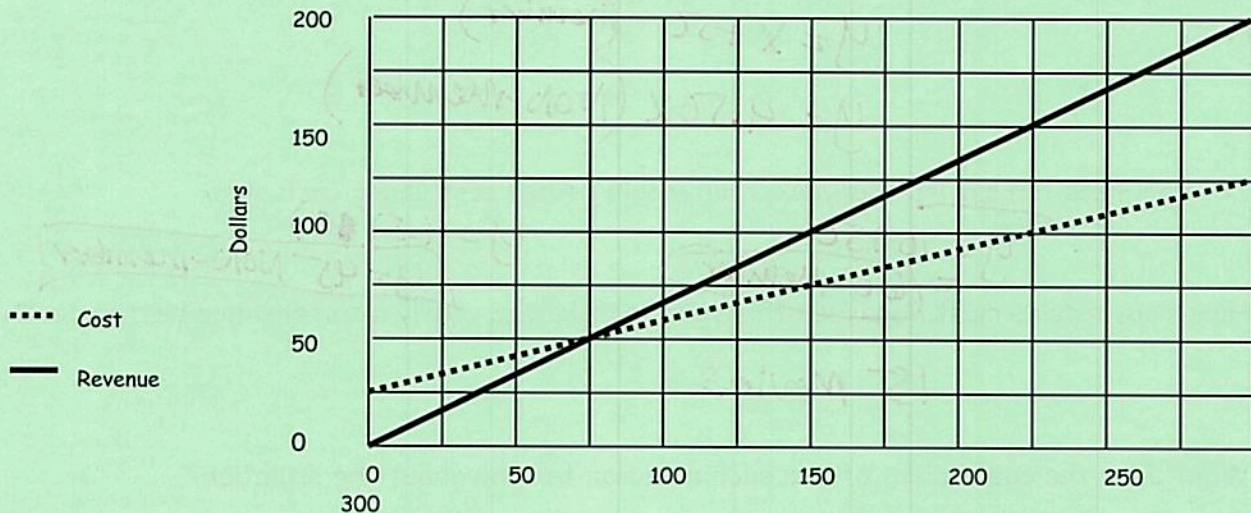
$$-3 \quad -3$$

$$x = 2.30$$

$$(2.30, 3.00)$$

The school band decides to sell chocolate bars to raise money for an upcoming trip. The cost and the revenue of selling the candy bars are represented on the graph below.

Candy Bar Sales



- At what point do the two graphs intersect? (75, 50)
- What would be the approximate revenue from selling 50 candy bars? about \$35
- What would be the approximate revenue be from selling 125 candy bars? about \$85
- How many candy bars must the band sell for the revenue to be \$200? How much of this revenue would be profit? 300 Candy Bars / 200 - 125 = \$75 profit

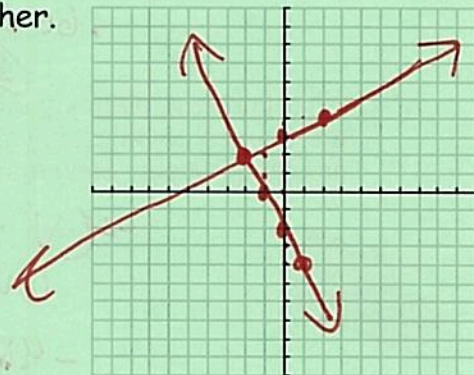
Graph the following lines to find where they intersect each other. Show all your work needed.

$$5. \begin{cases} -1x + 2y = 6 \\ 2x + y = -2 \end{cases}$$

Answer: (-2, 2)

$$y = \frac{1}{2}x + 3$$

$$y = -2x - 2$$



The new movie theater opened in Regal's neighborhood. The theater offers a yearly membership for which customers pay a fee of \$50, after which they pay only \$1 per movie. Nonmembers pay \$4.50 per movie. Regal is trying to figure out whether to buy a membership. She writes these cost equations.

6. Write a system of equations to represent the cost for a member and the cost for a nonmember.

$$y = x + 50 \text{ (member)}$$

$$y = 4.50x \text{ (non-member)}$$

7. If Regal sees ten movies this year, what would be her cost under each plan?

$$y = 10 + 50 = 60 \text{ Member}$$

$$y = 4.5(10) = 45 \text{ Non-member}$$

8. How many movies must Regal see this year to make the yearly membership a better deal?

15 movies

9. What does the coefficient of n in each equation tell you about the situation?

The cost per movie

Write and Solve the system of equations for each problem using either substitution or elimination. Show all work on your own paper.

10. You have 12 coins in quarters and dimes. If your coins total \$1.95, how many of each do you have?

$$Q + D = 12$$

$$-4(.25Q + .10D = 1.95)$$

$$-Q + .40D = -7.8$$

$$\hline Q + D = 12$$

$$.60D = 4.2$$

$$D = 7$$

7 dimes
5 quarters



$$Q + 7 = 12$$

$$Q = 5$$

11. An art class is planning a trip to a museum. There are 22 people on the trip. There are 4 drivers and 2 types of vehicles, vans and cars. The vans seat 6 people and the cars seat 4 people, including drivers. How many vans and cars does the class need for the trip?

$$-4(V + C = 4)$$

$$6V + 4C = 22$$

$$-4V - 4C = -16$$

$$\hline 2V = 6$$

$$V = 3$$

$$3 + C = 4$$

$$C = 1$$



12. A will states that John is to get 3 times as much money as Mary. The total amount they will receive is \$11,000. How much will each get?

$$J + M = 11,000$$

$$J = 3M$$

$$3M + M = 11,000$$

$$4M = 11,000$$

$$M = 2750$$

$$J = 3(2750)$$

$$J = 8250$$

13. The width of a patio is 5 feet less than twice its length. The difference between the length and width is 1 foot. Find the dimensions of the patio.

$$W = 2L - 5$$

$$L - W = 1$$

$$L - (2L - 5) = 1$$

$$-L + 5 = 1$$

$$-L = -4$$

$$L = 4$$

$$4 - W = 1$$

$$-4 \quad -4$$

$$-W = -3$$

$$W = 3$$

14. To furnish a school cafeteria a school can spend \$5200 on tables and chairs. Tables cost \$200.00 each and chairs cost \$40.00. There are 8 times as many chairs as tables. How many tables and chairs will the school purchase for the cafeteria?

$$200t + 40c = 5200$$

$$c = 8t$$

$$200t + 40(8t) = 5200$$

$$200t + 320t = 5200$$

$$\frac{520t}{520} = \frac{5200}{520}$$

$$t = 10$$

$$c = 80$$

