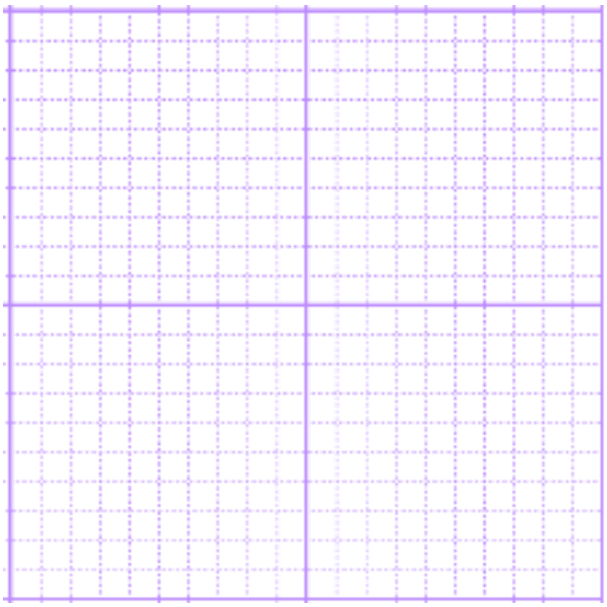
Graph each equation to find the point of intersection.

Test Name_____

*Remember to find a **nice starting point**, then use **the slope** to find other nice points.*

Problem 1

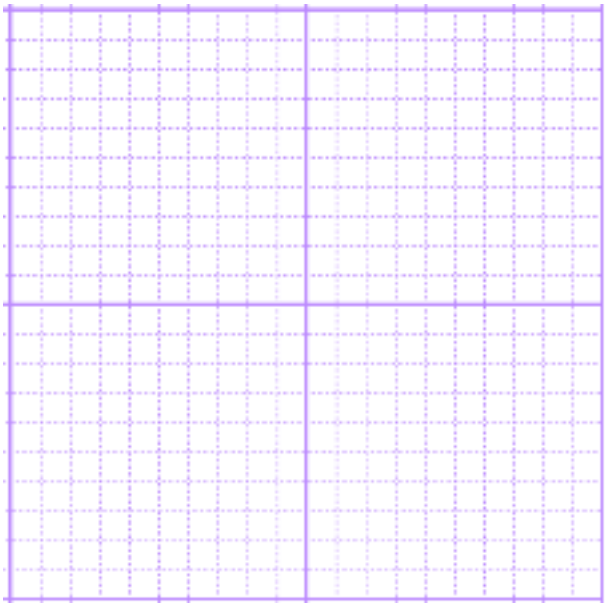


$y = \frac{3}{4}x - 3$

$x + 2y = 14$

Pt of Intersection _____

Problem 2



$2x + 5y = 16$

$y = \frac{3}{2}x + 7$

Pt of Intersection _____

Solve each system of equations using **substitution. Show your work!**

Problem 3
$3x + y = 7$
$x - 6y = 15$ Pt of Intersection _____

Solve each system of equations using **Linear Combination / Elimination. Show your work!**

Problem 4
$3x - 2y = 7$
$5x + 3y = -1$ Pt of Intersection _____

Solve each system of equations using **Matrices. NO WORK NEEDED!**

a. $\begin{aligned} 12x - y + 12z &= 6 \\ 2x + y - 2z &= -4 \\ 9x + 2y + 3z &= 3 \end{aligned}$

b. $\begin{aligned} 5x + 9y &= 19 \\ 2x - y &= -20 \end{aligned}$

c. $\begin{aligned} 2x - y + z &= 4 \\ x + y - z &= 11 \\ 4x - 2y + 2z &= 5 \end{aligned}$

a _____ b _____ c _____

d. $\begin{aligned} 3x + 6y - 6z &= 9 \\ 2x - 5y + 4z &= 6 \\ -x + 16y + 14z &= -3 \end{aligned}$

e. $\begin{aligned} 3x - 5y &= 1 \\ 2x + y &= -2 \end{aligned}$

f. $\begin{aligned} x + 3y - 2z &= 4 \\ 4x - y + z &= -1 \\ 3x - 4y + 3z &= -5 \end{aligned}$

d _____ e _____ f _____

Solve each word problem using a system of equations and **Matrices.**

Problem 11. An express train travels 80 kilometers per hour from Wheaton to Ward. A local train, traveling at 48 kilometers per hour, takes 2 hours longer for the same trip. How far apart are Wheaton and Ward?

Object	Rate mph	Time	Distance
Total			

Equations:	Matrix:	Solution

Problem 12. The sum of three numbers is forty two. The second number is twice the first number and the third number is three less than the second number. Find the three numbers.

One:
Other:
Another:

Equations:	Matrix:	Solution

Problems 13. A coin bank contains 25 coins in nickels, dimes, and quarters. There are twice as many dimes as quarters. The value of the coins is $2.15. How many dimes are in the bank?

Coins	Amount # coin	Value ¢	Total Value
Nickels		5	
Dimes		10	
Quarters		25	
Total			

Equations:	Matrix:	Solution

Problem 14. Steve Devine invested $7200 for one year, part at 10% annual interest and the rest at 14% annual interest. His total interest for the year was $960. How much money did he invest at each rate?

Accounts	p	r	t	I
Investment A				
Investment B				
Total				

Equations:	Matrix:	Solution

Problem 15. A commuter plane flew to a small town from a major airport at an average speed of 300 mph. The average speed on the return trip was 200 mph. What is the distance between the two airports if the total flying time was 4 hours?

Object	Rate mph	Time	Distance
Total			

Equations:	Matrix:	Solution

Problem 16. The sum of two numbers is 25. Twelve less than four times one of the numbers is 16 more than twice the other number. Find both numbers.

One:
Other:

Equations:	Matrix:	Solution

Problem 17. Laura and Brent paddled a canoe 6 miles upstream in four hours. The return trip took three hours. Find the rate of the current and the rate at which Laura and Brent paddled the canoe in still water.

Canoe speed:
water speed:

Object	Rate mph	Time	Distance
Total			

Equations:	Matrix:	Solution

Problem 18. A used book store also started selling used CDs and videos. In the first week, the store sold a combination of 40 CDs and videos. They charged $4 per CD and $6 per video and the total sales were $180. Determine the total number of CDs and videos sold.

CD's:
Videos:

Equations:	Matrix:	Solution

Problem 19. At a sale on winter clothing, Cody bought two pairs of gloves and four hats for $43.00. Tori bought two pairs of gloves and two hats for $30.00. Find the prices of the hats and gloves.

Equations:	Matrix:	Solution

20. Two investments earn a total annual income of $1069. One investment is in a 7.2% annual interest account and the other is in a 9.8% simple interest CD. The total amount invested is $12,500. How much is invested at each account?

Accounts	p	r	t	I
Investment A				
Investment B				
Total				

Equations:	Matrix:	Solution