

MATHEMATIC S 2204  
Chapter 1 Review

Directions: Do all questions on this paper. Be sure to show all workings as full marks will not be given for answers only or for incomplete workings.

Part I:

1. Which of the following would be a good first step in solving the following system of equations by the elimination method?

$$\begin{cases} 2x - 3y = 4 \dots\dots\dots(1) \\ 3x + 2y = -2 \dots\dots\dots(2) \end{cases}$$

- a. Multiply equation(1) by 3 and equation(2) by 2 and add.  
 b. Multiply equation(1) by 2 and equation(2) by 3 and add.  
 c. Multiply equation(1) by -2 and equation(2) by 4 and add.  
 d. Multiply equation(1) by 4 and equation(2) by -2 and add.

2. Which system of equations has the point (1,2) as its solution?

A)  $\begin{cases} 4x - y = 2 \\ x + 3y = 6 \end{cases}$       B)  $\begin{cases} 2x + 2y = 6 \\ 3x - 6y = -9 \end{cases}$       C)  $\begin{cases} x + y = 4 \\ x - y = -1 \end{cases}$       D)  $\begin{cases} 2x - y = 0 \\ 2x + y = 3 \end{cases}$

3. What is the x-intercept of the graph of  $2x - 3y = 9$ ?

A) -4.5      B) -3      C) 2      D) 4.5

4. Which of the following ordered pairs is the solution for the system of equations:

$$\begin{cases} 3x - 2y = 13 \\ 2x + 4y = -2 \end{cases}$$

- a) (-2, 3)      b) (3, -2)      c) (-3, 2)      d) (2, -3)

5. What is the y-intercept of the graph of  $2x - 3y - 9 = 0$ ?

A) -3      B) -2/3      C) 2/3      D) 3

6. The system  $\begin{cases} 2a - b = 4 \\ 2a - b = 2 \end{cases}$  is:

- a) inconsistent      b) consistent and dependent  
 c) inconsistent and dependent      d) consistent and independent

7. A system of equation has the point (2, -3). Which of the following would be an equivalent system?

a)  $\begin{cases} x + y = 5 \\ 2x - y = 7 \end{cases}$       b)  $\begin{cases} 2x - 3y = 13 \\ x + 4y = 10 \end{cases}$   
 c)  $\begin{cases} x - 2y = 8 \\ 2x + 4y = -6 \end{cases}$       d)  $\begin{cases} 2x + 3y = 0 \\ -2x + y = 8 \end{cases}$

8. Solve the following system of linear equation for x.  $\begin{cases} 3x + 2y = 1 \\ x - 3y = -7 \end{cases}$

a) 6      b) 2      c) -1      d) -6



16. For how many minutes will plans A and C cost the same?

- a) 0                      b) 100                      c) 125                      d) 150

17. At prom, student council charged \$3 for couples and \$2 for singles. If 365 tickets were sold and total receipts were \$925, which pair of equations would determine the number of each ticket sold?

A) 
$$\begin{cases} x - y = 365 \\ x + y = 925 \end{cases}$$

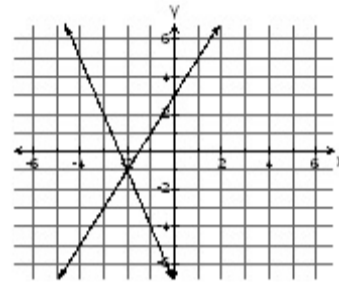
B) 
$$\begin{cases} 3x + 2y = 365 \\ x + y = 925 \end{cases}$$

C) 
$$\begin{cases} x + y = 925 \\ 2x + 3y = 365 \end{cases}$$

D) 
$$\begin{cases} x + y = 365 \\ 3x + 2y = 925 \end{cases}$$

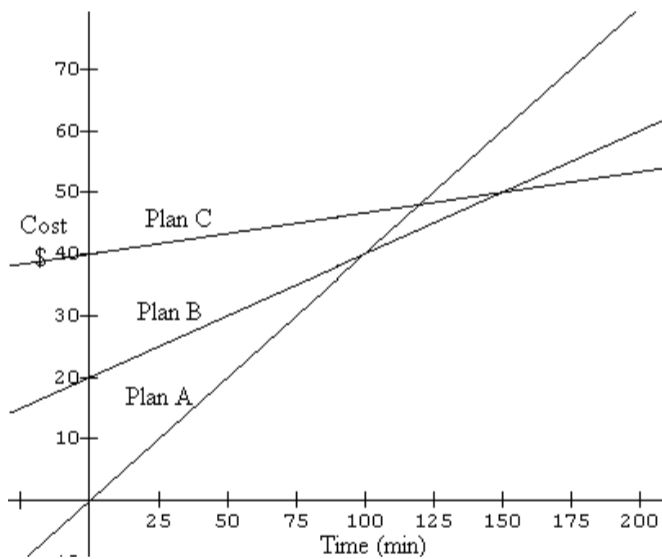
18. What is the solution to the system graphed below?

- a) (-2, -1)  
 b) (-2, 1)  
 c) (-1, 2)  
 d) (1, -2)



Part II:

1. The graph below describes three phone plans. Describe when it is best to have each plan.



2. Solve each of the following systems of equations by the indicated method.

a) 
$$\begin{cases} 3x - 2y = -10 \\ 4x + y = -6 \end{cases}$$
, solve by matrices.

b) 
$$\begin{cases} 4m + 3n = 5 \\ 2m - n = -5 \end{cases}$$
, solve by substitution.

c) 
$$\begin{cases} 6x - 3y = -27 \\ 5x + 4y = -42 \end{cases}$$
, solve by elimination.

3. You have a 20% salt solution and a 45% salt solution. Determine how much of each type of salt solution is needed to create 8L of solution which is 35% salt. Create a system of equations and solve using matrices.

4. Movie tickets are priced at \$8 for adults and \$4 for children. If 600 tickets were sold for a movie and the total amount taken in was \$4000, how many adult tickets and how many children's tickets were sold?

5. Al and Ted are brothers. Al is older. Twice the sum of their ages is 36 and one-half Al's age is 3 more than Ted's age. How old is each brother?

6. Solve by matrices: 
$$\begin{cases} 3x + 2y = 8 \\ 3x - 2y = 4 \end{cases}$$

7. Solve by substitution: 
$$\begin{cases} 3x - y = 1 \\ 2x + 2y = 2 \end{cases}$$

8. Solve by elimination: 
$$\begin{cases} 3x + 5y = 11 \\ 4x - 2y = -20 \end{cases}$$

9. A jeweller works with two kinds of metals, the first contains 72% silver and the second contains 86% silver. How many grams of each should be melted together to get 50 g that is 84% silver? Create a system of equations and solve using matrices.

10. Billy rented 3 movies and 4 video games for \$22.50. Steve rented 5 movies and 2 video games for \$27. Determine the price for a rental of a movie and a rental of a video game.

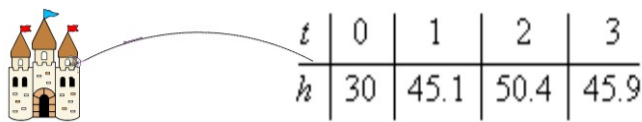
11. Peter's coin collection consists of dimes and quarters. If he has 53 coins worth \$7.85, how many of each type of coin does he have?

12. Solve the system: 
$$\begin{cases} \frac{1}{4}y - 6x = -5 \\ \frac{1}{2}x + \frac{1}{4}y = \frac{9}{4} \end{cases}$$

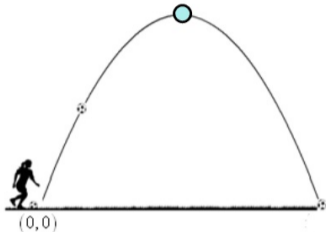
13. Casey and Riley use the same long distance phone plan. Use matrices to find the charges, per minute, for calls in Canada and to the U.S. .

	# of minutes within Canada (c)	# of minutes to U.S. (u)	Total Charges (\$)
CASEY	35	3	4.25
RILEY	129	11	15.65

14. An archer atop a turret 30 m above the ground shoots an arrow as shown. The height of the arrow,  $h$ , in metres above the ground,  $t$  seconds after shooting, is shown in the table below. Algebraically determine the function that defines the height  $h$  of the arrow above the ground  $t$  seconds after shooting.



15. A soccer ball lying on the ground is kicked down field and hits the ground 62m away. If the maximum height reached by the ball is 15m, determine its height when it is 48m downfield.



16. A seagull dives from a cliff to retrieve a fish which is just below the surface of the ocean. The graph and table show the height of the seagull above the sea level over a 5 second period. Algebraically, determine the quadratic function that defines the path of the seagull.

$T$	0	1	2	3	4	5
$H$	4	2.05	0.6	-0.35	-0.8	-0.75

17. A flare is fired as a distress signal and its height,  $h$ , in meters above the ground,  $t$  seconds after firing is provided in the table below. Algebraically determine the quadratic function that defines the path of the flare.

$t$	0	1	2	3
$h$	2	97	182	257