Review for MIDTERM

MIDTERM TASK #1 date_____

MIDTERM TASK #2 date_____

Success Criteria

☐ Students on IEP – if you will need more time to finish, arrange a ride afterschool on these days (or finish over your lunch that same day)

☐ You must come to class on the dates above. If you miss any of these days, you must give a doctor's note in order to do the evaluation on another day OR do full exams at the end of the semester!

☐ Ensure your Survival Guides are complete and corrected. These you may use on PART #1 (but not on PART #2)

☐ Complete this Review booklet. Check your answers with the file online www.mrsk.ca

Date	pg	Topics	Done?	Corrected?
		Finish and correct your SURVIVAL GUIDES		
	2-4	Linear Relations		
	5-6	Solve Equations		
	7-10	Linear Systems		
	11-13	EXTRA practice		
		ANSWERS – look online		

FORMULAS GIVEN ON PART #2**:**

SLOPE	$m = \dfrac{y_2 - y_1}{x_2 - x_1}$	$m = \dfrac{rise}{run}$
LINEAR EQUATION	$y = mx + b$	

Linear Relations

1. Create a table of values for the line y = 4x – 2 and
    graph the results below.

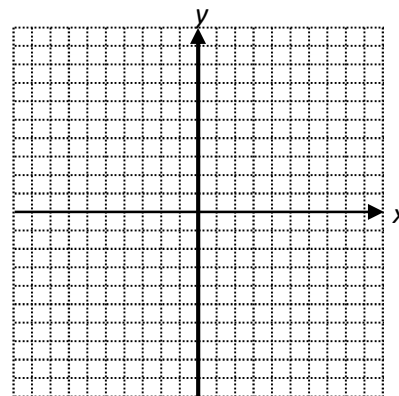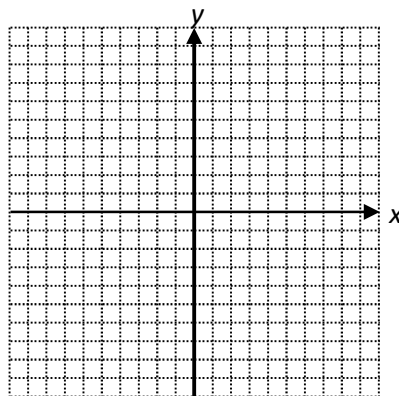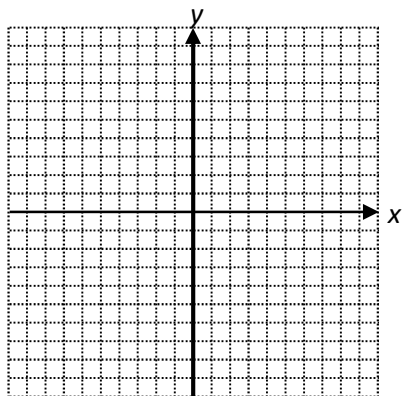| x	Y = 4x - 2
-2	
-1	
0	
1	
2	
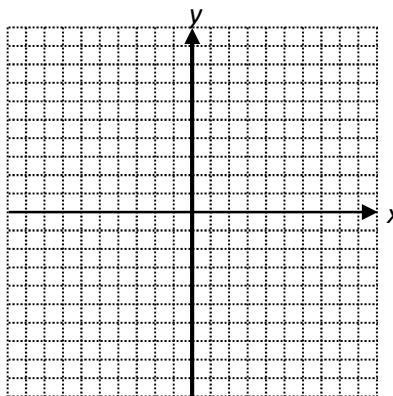
2. Graph the following lines by calculating the x and y intercepts.

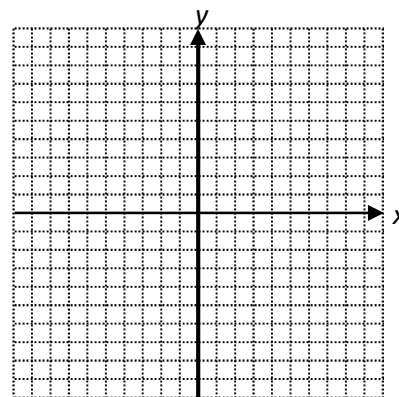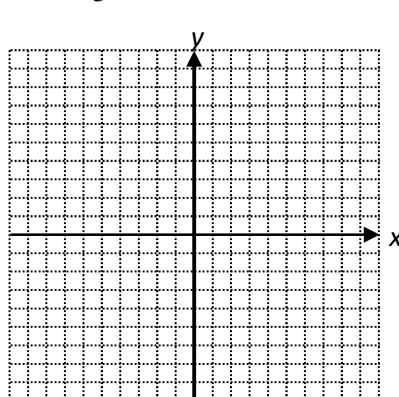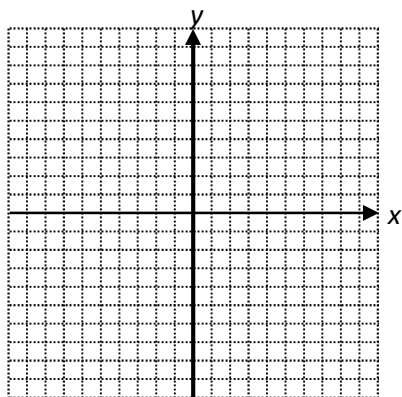a) y + 8 = -2x   b) 5x –2y = 10   c) -3x – 2y = 12

3. Graph the lines using slope y-intercept method.

a) y = – x + 8   c) y = -2x + 2

b) $y = \dfrac{4}{3} x + 1$

4. Calculate the slope of the line AB. A(3, 4) B(2, -2)

5. Determine the equation of the lines
   a) slope is 2 and y intercept is 8

   b) m = -3 and b =2

   c) b= 0 and m = -1/3

   d) slope is 2 and passes through (3, 8)

   e) y-int is -3 and passes through (2, 5)

   f) slope is 2.5 and passes through (0, 0)

   g) the equation is parallel to y= -7x + 3 and y-int=5
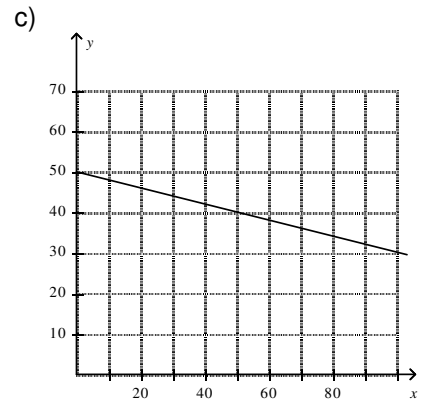
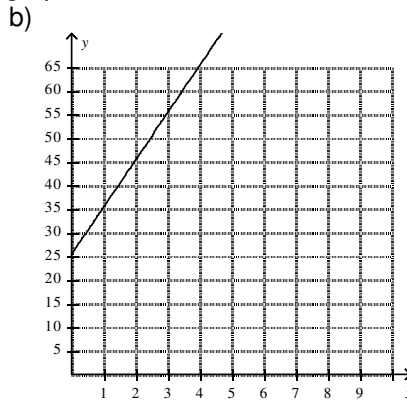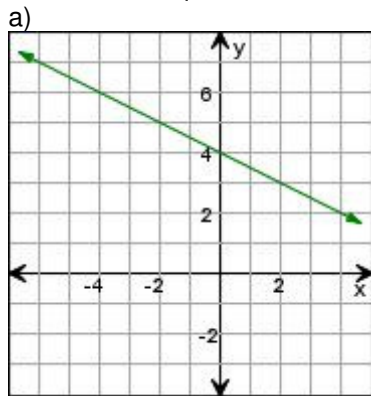   h) the equation is perpendicular to y = 5x – 9, y-int=4

   i) the line is perpendicular to y=-2x +4 and y-int=-1

   j) the line is steeper than y = -3x -1 and y-int=0

   k) passing through through (-3,6) and (9, 0)

   l) passing through (1, -1) and (5, 5)

6. Find the equation of the line for each graph.

a)

b)

c)

7. Silvio works in a hair salon. He has 50 regular customers. His customer base is growing at a rate of three new customers per month.

a) Write an equation to describe the total number of customers.

    Let _____

    Let _____

    Equation _____

b) How long will it be before Silvio has 125 customers?

8. Paula bought a parrot. The bird had a 10 word vocabulary, but Paula has taught it 3 new words per week.

a) write an equation to represent the number of words the bird can speak

    Let _____

    Let _____

    Equation _____

b) Determine how large a vocabulary the parrot could have after 1 year (or 52 weeks)

9. The cost of Jack's cell phone is $150 plus $30 per month.

a) Write an equation that describes the cost of Jack's cell phone as the months pass.

    Let _____

    Let _____

    Equation:_____

b) How much will Jack spend on the cell phone in 3 years?

10. What is the pattern in the table of values?

x	y
0	-2
1	1
2	4
3	7
4	10
5	13

a) What is the relationship between the rate of change and the slope?

b) What is the slope?

c) What is the y intercept?

d) Write the equation of the line that models this linear system.

Solve Equations

Things to know:
- solve one and two step equations
- rearrange formulas
- use formulas in word problems
- rearrange linear equations with y being isolated

1. Solve each equation:

a) $m+9=-1$

b) $1=x-\dfrac{3}{4}$

c) $7y-5=16$

d) $\dfrac{x-5}{3}=-3$

e) $5x-4=8+2x$

f) $5k-3k=4k-2$

g) $-5(11+x)=-45$

h) $\dfrac{3}{4}(x+2)=-3$

i) 2(x- 10)=5(x – 8)

j) 6(x -2) = 3x

k) -(w+4) = 3(w- 4)

l) 8+3p = 2(p + 3)

2. Solve each formula for the indicated variable

a) $A = \dfrac{bh}{2}$ for h

b) $A = lw$ for l

c) $A = 2\pi r^2 + 2\pi rh$ for h

3. The amount of food energy required by a busy courier is given by the formula $E = -125T + 15250$. E is the amount of food energy in kilojoules. T is the outside temperature in degrees Celsius. Find the outside temperature if the amount of food energy is 12 500 KJ.

4. Alan takes a taxi from his house to his friend Drew's home. The drive is 6 km. The taxi driver charges a flat fee of $10 plus $0.25/km. this can be modelled using the equation $C = 0.25x + 10$, where x represents the distance travelled in kilometres, and C represents the cost in dollars. How much will the taxi ride cost?

5. Rearrange the equation the following equations to y = mx + b form.
a) 2x + 3y − 12 =y   b) 5x − 15y − 15 = 0   c) 3x − 4y + 12 = 0   d) 3x − y − 5= 0
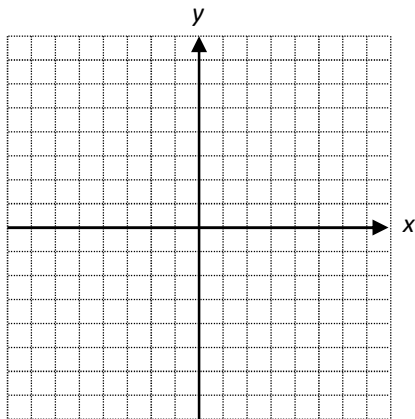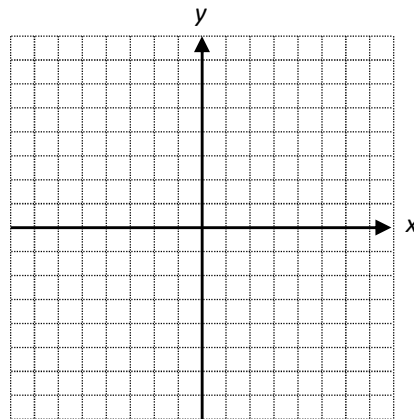
Linear Systems

Things to know:
- Solve a linear system by graphing
- Solve a linear system by substitution
- Solve a linear system by elimination
- Model problems for linear systems (ie. come up with equations.)
- Interpret the solution to a system

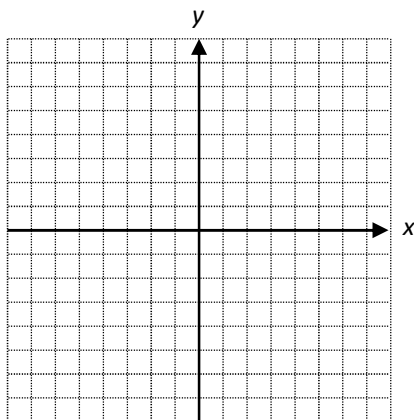1. Find the point of intersection by graphing the linear systems given:
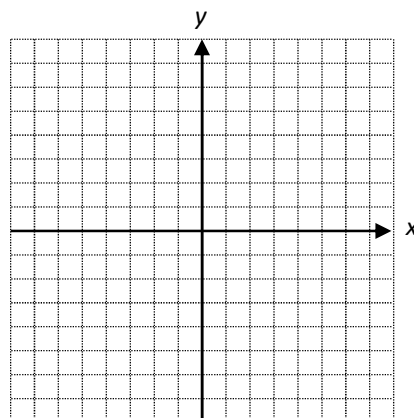
a)
$$y = 2x + 1$$
$$y = 3x - 2$$

b)
$$y = 2x + 1$$
$$y = 3x + 5$$

c)
$$y = x - 1$$
$$y = -3x + 3$$

d)
$$y = \frac{-1}{3}x - 3$$
$$y = \frac{2}{3}x - 6$$

Solve by graphing. Ensure you use appropriate scale, label axes, label lines and give the graph a title. Once POI is found, explain what it means.

2. Alison and Lucy belong to different fitness clubs. Alison has a membership that cost her $100 and she pays $3 each time she visits the club. Lucy has a pay-as-you-go membership and she pays $8 each time she visits her club.

    a) Write a system of linear equations to represent the situation.
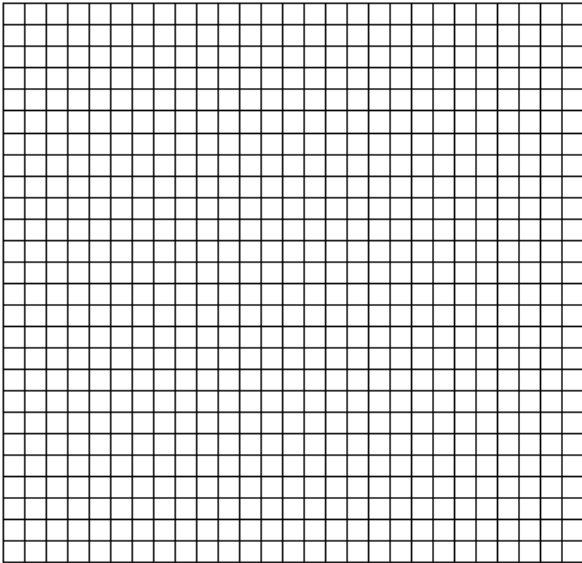
    b) Fill in the tables to help you graph the lines
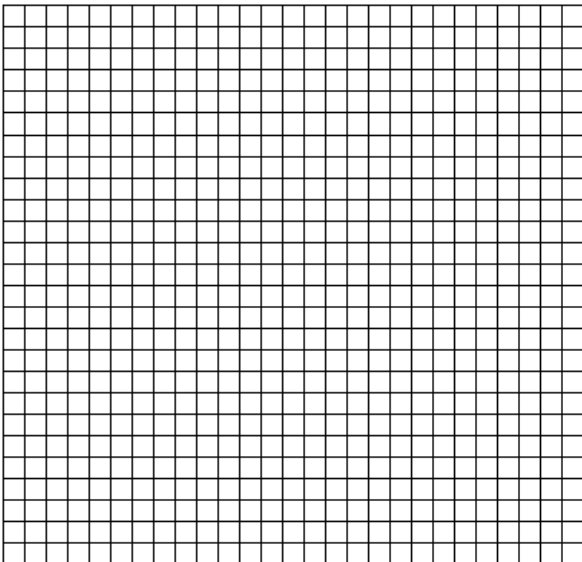
Alison's club:

visits	total cost
0	
15	
30	

Lucy's club:

visits	total cost
0	
15	
30	

    c) Find and check the point of intersection. What does this point represent?

3. At the bowling alley, Angela rented shoes for $5 and it cost her $6.75 to bowl each game. At another bowling alley the cost is $8 per game

    a) Write a system of linear equations to represent the situation.

    b) Fill in the tables to help you graph the lines

First bowling alley:

games	total cost
0	
3	
6	

Second bowling alley:

games	total cost
0	
3	
6	

    c) Find and check the point of intersection. What alley would you choose if you wanted to bowl a lot of games? Why?

4. Solve the following systems by method of substitution.

a) $y = 2x + 1$
    $y = -2x - 1$

b) $y = 3x - 5$
    $2x - 4y = 10$

c) $y = -2x - 6$
    $-x - 3y = 13$

d) $y = -4x - 3$
    $2x - y = 3$

5. Solve the following systems by method of elimination.

a) $3x - 4y = 14$
$3x + 7y = -8$

b) $x + 2y = 9$
$4x - 2y = -4$

c) $x + 2y = 2$
$3x + 5y = 4$

d) $4x - 2y = -2$
$x + 5y = 5$

EXTRA practice

1. Solve the following

a) $3x - 8 = 7$

b) $\dfrac{x}{3} + 2 = 6$

c) $6 - 4x = 2x + 12$

d) $2(x+1) = 3x + 6$

e) $\dfrac{2(x+3)}{4} = x - 2$

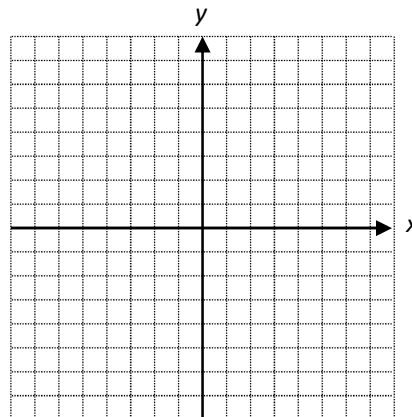2. Rearrange to y=mx+b form

a) $2x + y - 6 = 0$

b) $9x - 3y + 12 = 0$

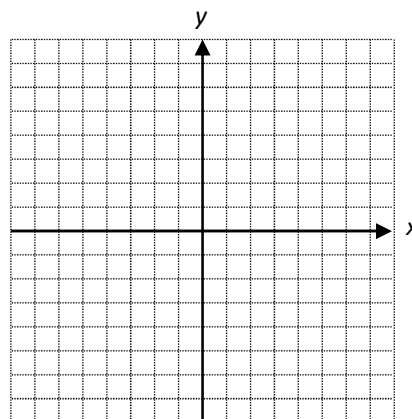3. Rearrange for the given variable:

a) $P = 2l + 2w$, for w

b) $S = 2\pi rh$, for h

4. Calculate the intercepts for $6x + 4y = 12$.
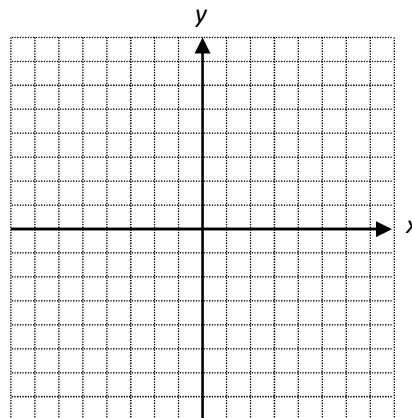
Graph the line using the intercepts

5. Complete the table of values and graph the line.
    Y= 1.5x + 3

x	y = 1.5x + 3
-2	
-1	
0	
1	
2	
3	

6. Graph using slope y-intercept method $y = -\dfrac{1}{3}x + 5$

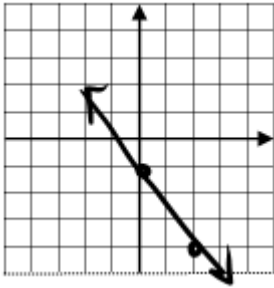7. Determine the equation of the line for the following.

d) passes through the points (3, 4) and (1, -6)

    a) Parallel to $y = -\dfrac{2}{5}x - 12$

    b) perpendicular to $y = -\dfrac{2}{5}x - 12$

    c) has a slope of 4 and passes through (-1, -6)
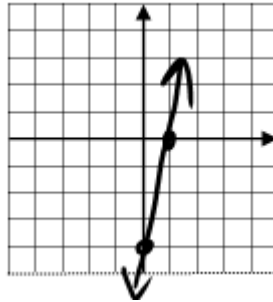
8. Use the graph to find the equation of the line

a)

b)

9. Model the following situations. Include 2 "let" statements and 2 equations.

a)   KC Fitness Club charges a flat fee of $25 a month plus $5 per visit. Workout Zone charges a flat fee of $35 a month plus $3 per visit.

b)   For Nina's retirement party, her family decides to rent a hall for a dinner. Regal Hall costs $500 for the hall rental and $15 per guest, and Party Place charges $410 for the hall and $18 per guest.

c)   George wants to hire a truck to do some moving. Athena's Garage charges $80 for the day plus $0.22/km. City Truck Rental charges $100 for the day and $0.12/km.

d)   Neil's brother has a total of 8 cars and trucks to play with. For his birthday, he wants to double the number of cars he has. If he does he will then have a total of 11 cars and trucks. How many cars and trucks does Neil's brother have now?

e)   Christine plans to go to college in a year and needs to save for tuition. She invests is summer earnings of $3050, part at 8% interest per year, and part at 7.5% per year. After one year, Christine has earned a total of $234 in interest.

f)   Students hold a car wash to raise money for a school trip to the west coast. They charge $7 per car and $10 per van. They washed a total of 52 cars and vans and earned $457.