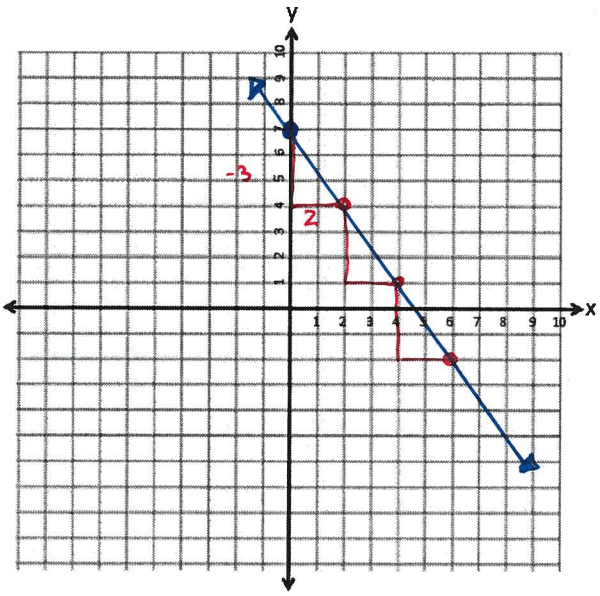
KEY

Math 10C

L47 – 8.1 Graphing Linear Systems of Equations

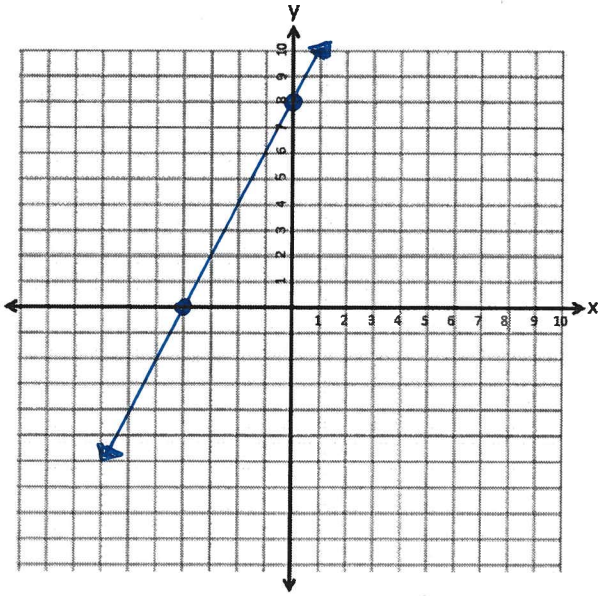
Part 1 – Graphing Slope y-Intercept Form (y=mx+b)

Q1: Graph the line $y = -\frac{3}{2}x + 7$



Part 2 – Graphing General Form (Ax+By+C=0)

Q2: Graph the line $4x - 2y + 16 = 0$



x-int (Set y=0)

$4x + 16 = 0$
$4x = -16$
$x = -4$

y-int (Set x=0)

$-2y + 16 = 0$
$-2y = -16$
$y = 8$

or

$4x - 2y + 16 = 0$
$+2y \quad +2y$
$4x + 16 = 2y$
$\div 2 \quad \div 2 \quad \div 2$
$2x + 8 = y$

$\boxed{y = 2x + 8}$

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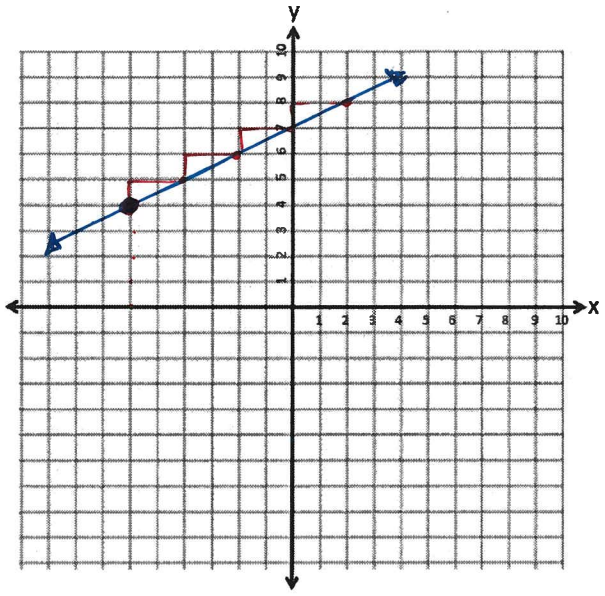
Part 3 – Graphing Slope-Point Form $(y-y_1)=m(x-x_1)$

Q3: Graph the line $(y-4)=\frac{1}{2}(x+6)$

$(y-4)=\frac{1}{2}(x--6)$ Point $(-6,4)$



or

$(y-4)=\frac{1}{2}(x+6)$

$y-4=\frac{1}{2}x+3$

$+4 \quad +4$

$y=\frac{1}{2}x+7$

Part 4 – Solutions to System of Equations

System of Linear Equations: Two or more linear equations involving common variables.

Solution(to a system of linear equations):

- A point of intersection of the lines on a graph.
- An ordered pair that satisfies both equations.

Q4: Given the lines $y=\frac{3}{4}x$ and $y=-2x+11$, which of the following points is a solutionto the system of equations?

(4,3)		(2,7)	
$y=\frac{3}{4}x$	$y=-2x+11$	$y=\frac{3}{4}x$	$y=-2x+11$
$y=\frac{3}{4}(4)$	$y=-2(4)+11$	$y=\frac{3}{4}(2)$	$y=-2(2)+11$
$y=3$	$y=-8+11$	$y=\frac{3}{2}$	$y=-4+11$
	$y=3$		$y=5$
When $x=4$, both equations give $y=3$.		When $x=2$, the first eqn gives $y=3/2$, so point $(2, 3/2)$.	
Both the equations have the point $(4,3)$.		When $x=2$, the second eqn gives $y=5$, so point $(2,5)$.	
		Not the same point, so not a soln.	

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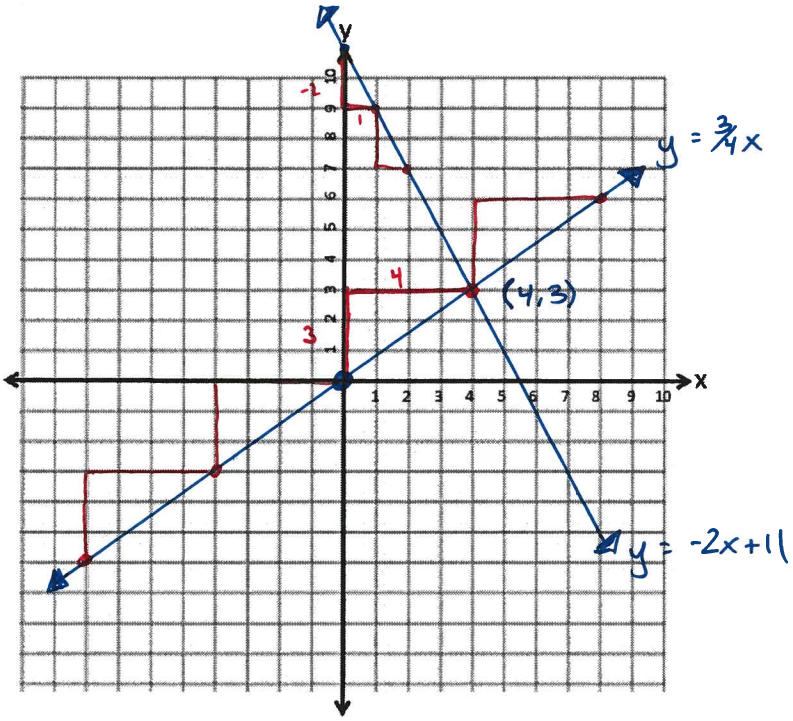
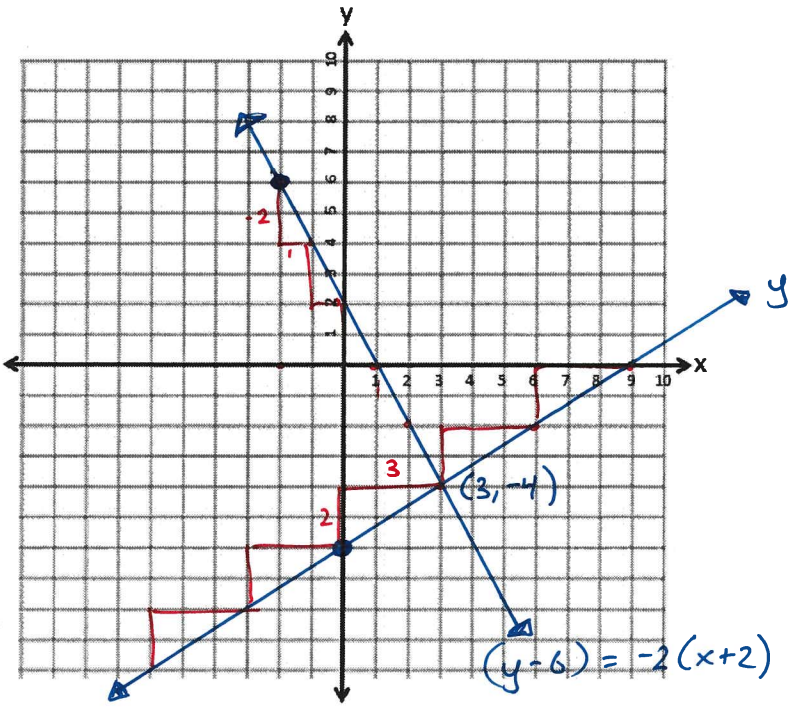
Q5: Graph the lines $y = \frac{3}{4}x$ and $y = -2x + 11$ to confirm the solution to the system of equations.



Soln is (4,3)

Q6: Graph the lines $(y - 6) = -2(x + 2)$ and $y = \frac{2}{3}x - 6$ to determine the solution to the system of equations. $(y-6) = -\frac{2}{1}(x - -2)$



Soln is (3, -4)

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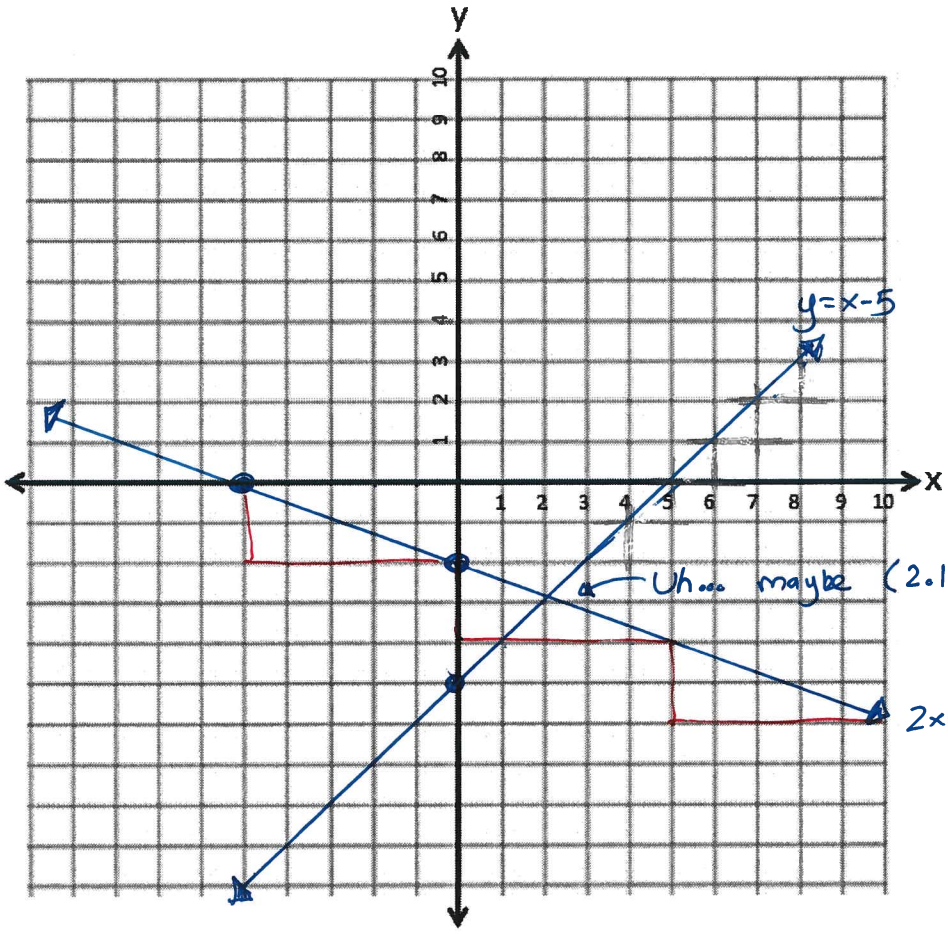
Q7: Graph the lines $2x + 5y + 10 = 0$ and $y = x - 5$ to determine the solution to the system of equations.



x-int (set y = 0)

$2x + 10 = 0$
$2x = -10$
$x = -5$

y-int (set x = 0)

$5y + 10 = 0$
$5y = -10$
$y = -2$

Uh... maybe (2.1, -2.9) ish?

Q8: Confirm your answer to Q7 by checking to see if the point exists on each line.

$2(x) + 5y + 10 = 0$
$2(2.1) + 5y + 10 = 0$
$4.2 + 5y + 10 = 0$
$14.2 + 5y = 0$
$5y = -14.2$
$y \approx -2.84$

$y = (x) - 5$
$y = (2.1) - 5$
$y \approx -2.9$

So not exactly the point of intersection, but pretty close.
We'll learn how to this exactly with algebra next lesson.

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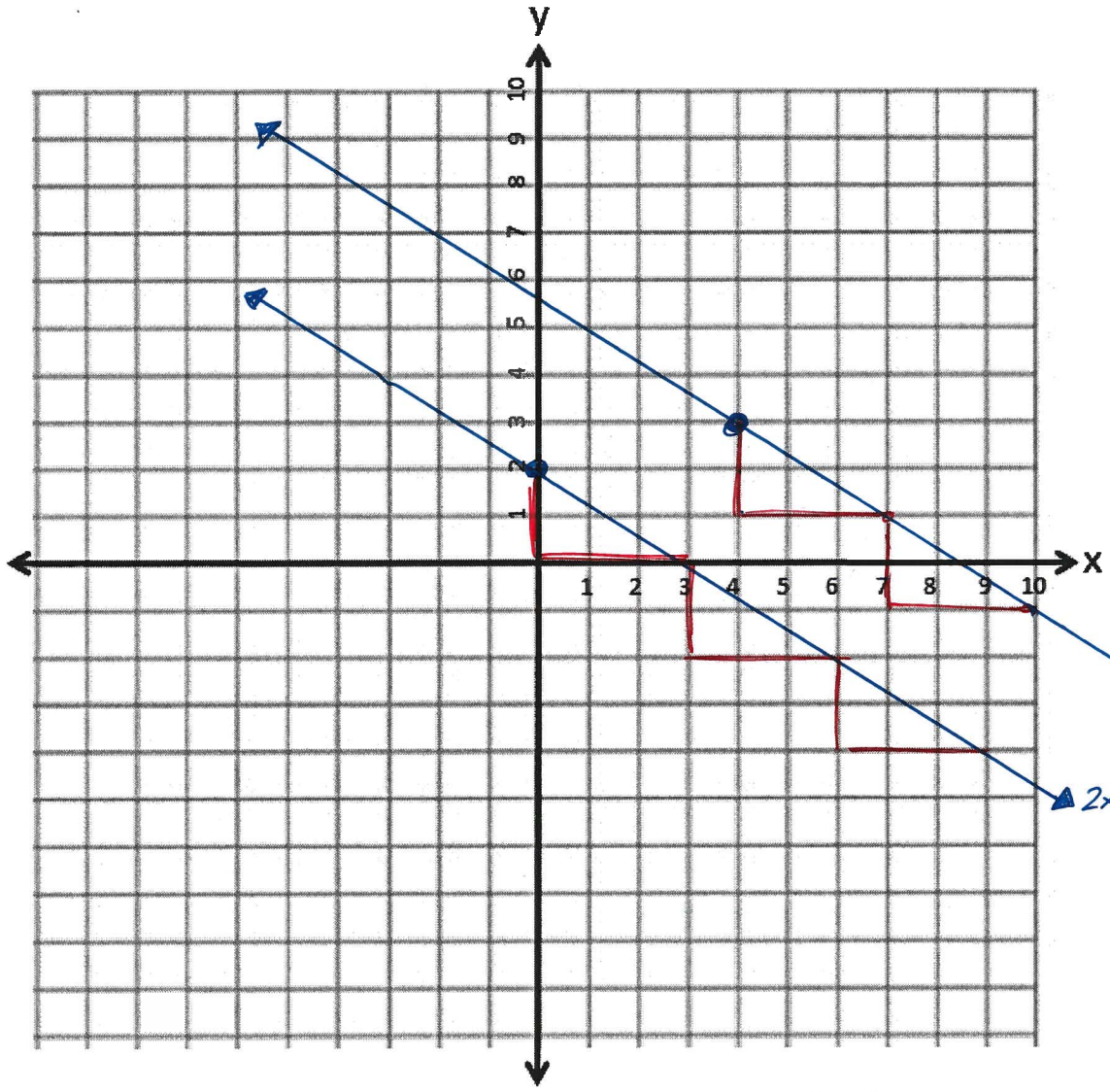
Q9: Graph the lines $(y-3) = -\frac{2}{3}(x-4)$ and $2x+3y-6=0$ to determine the solution to the system of equations.

$2x+3y-6=0$
$-2x \quad -2x$
$3y-6=-2x$
$+6 \quad +6$
$3y=-2x+6$
$\div 3 \quad \div 3 \quad \div 3$
$y=-\frac{2}{3}x+2$



Parallel lines never cross.
No solution.

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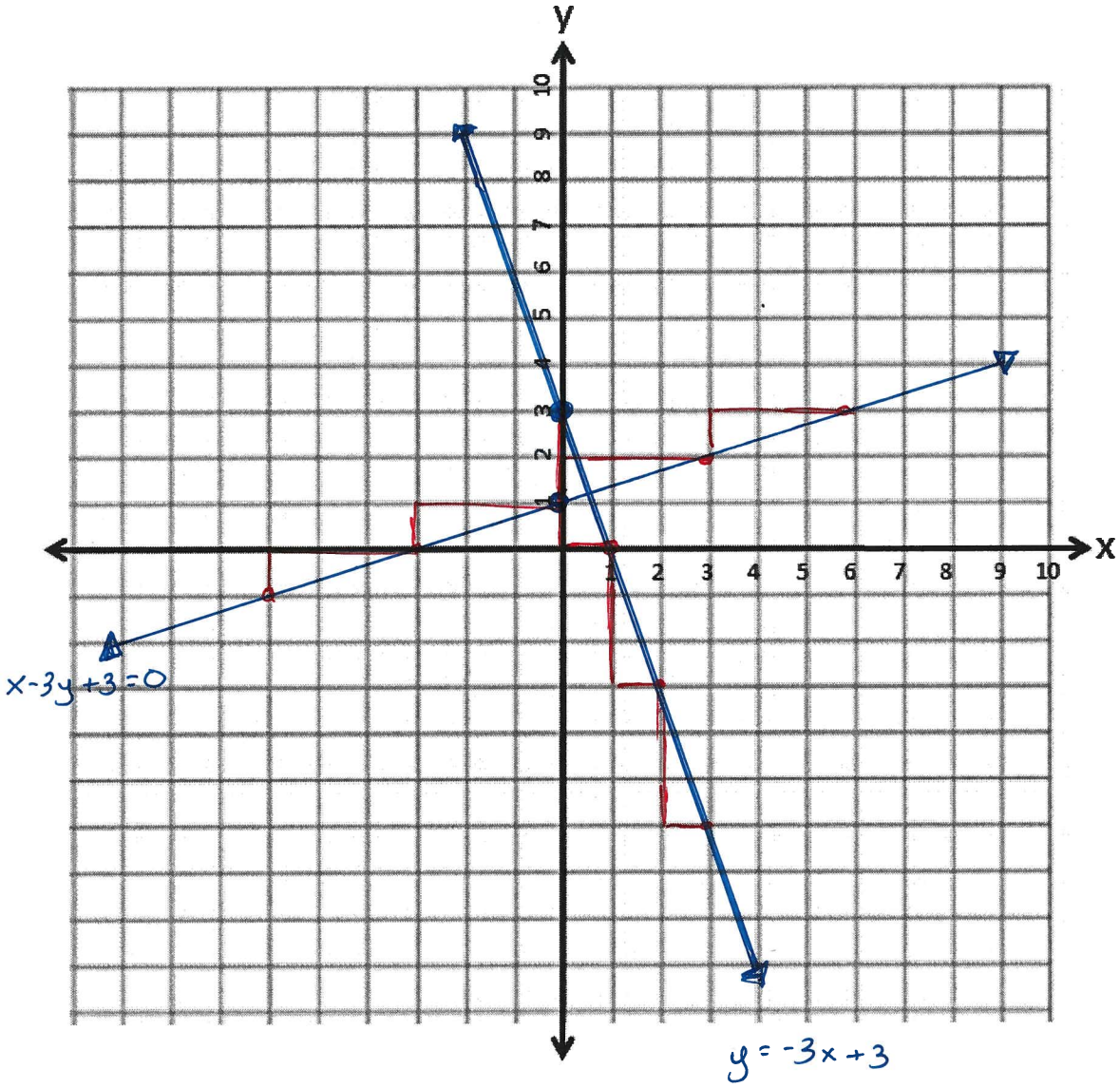
Q10: Graph the lines $x - 3y + 3 = 0$ and $y = -3x + 3$ to determine the solution to the system of equations.



$x-3y+3=0$

$+3y \quad +3y$

$x+3=3y$

$\div 3 \quad \div 3 \quad \div 3$

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

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

Soln is approx (0.5, 1.3)

Part 5 – Textbook Practice

Pg. 427 #6,7,8,10