Intro. To Graphing Linear Equations

The Coordinate Plane

A. The coordinate plane has 4 quadrants.

B. Each point in the coordinate plain has an **x-coordinate** (***the abscissa***) and a **y-coordinate** (***the ordinate***). The point is stated as an ordered pair (x,y).

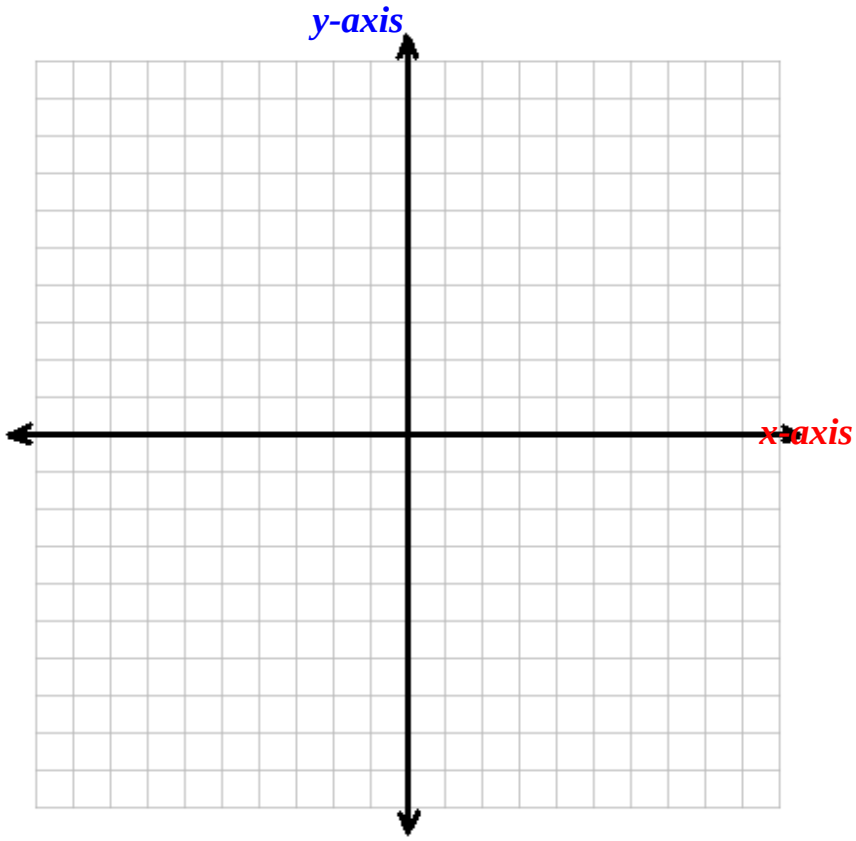
C. Horizontal Axis is the X – Axis. (y = 0)

D. Vertical Axis is the Y- Axis (x = 0)

Plot the following points:

a) (3,7) b) (-4,5) c) (-6,-1) d) (6,-7)

e) (5,0) f) (0,5) g) (-5,0) f) (0, -5)



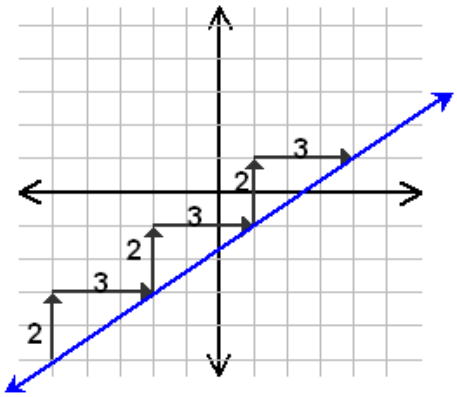
Slope Intercept Form

Before graphing linear equations, we need to be familiar with slope intercept form. To understand slope intercept form, we need to understand two major terms: The ***slope*** and the ***y-intercept***.

Slope (m):

$$m = \frac{\Delta y}{\Delta x}$$

The ***slope*** measures the steepness of a non-vertical line. It is sometimes referred to as the rise over run. It's how fast and in what direction y changes compared to x.



Rise = 2

Run = 3

Slope = $\frac{\text{Rise}}{\text{Run}} = \frac{2}{3}$

y-intercept:

The ***y-intercept*** is where a line passes through the y axis. It is always stated as an ordered pair (x,y). The x coordinate is always zero. The y coordinate can be found by plugging in 0 for the X in the equation or by finding exactly where the line crosses the y-axis.

What are the coordinates of the y-intercept line pictured in the diagram above? : _____

Some of you have worked with slope intercept form of a linear equation before. You may remember:

$$y = mx + b$$

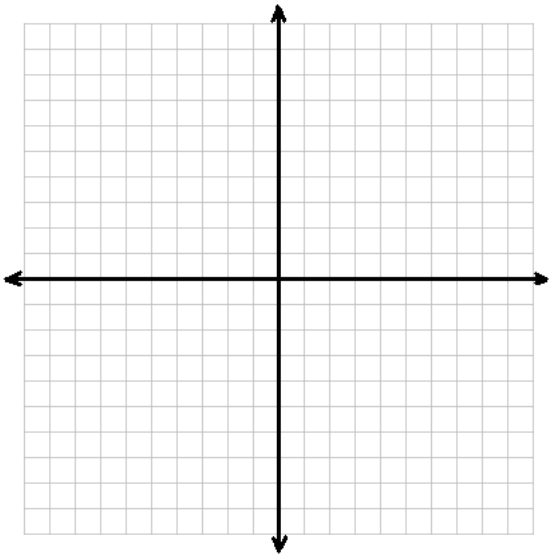
Using y = mx + b, can you figure out the equation of the line pictured above?: _____

Graphing Linear Equations

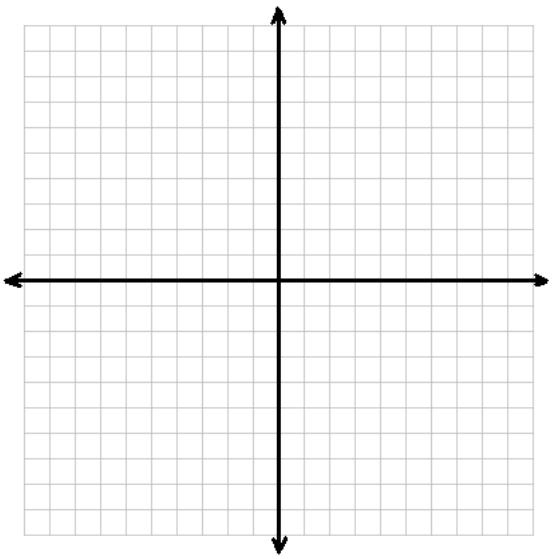
Graphing The Linear Equation: **y = 3x - 5**

1) Find the slope: m = 3 → m = $\frac{3}{1}$. = $\frac{y}{x}$.

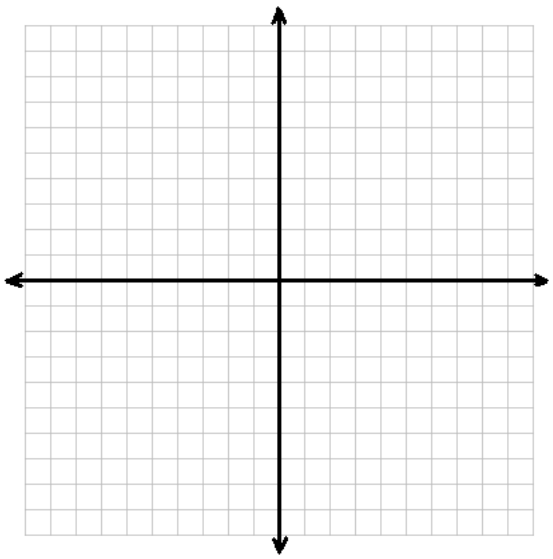
2) Find the y-intercept: x = 0 , b = -5 → (0, -5)
3) Plot the y-intercept
4) Use slope to find the next point: Start at (0,-5)
   m = $\frac{3}{1}$. = $\frac{\blacktriangle y}{\blacktriangle x}$. → up 3 on the y-axis
   → right 1 on the x-axis
   (1,-2) Repeat: (2,1) (3,4) (4,7)
5) To plot to the left side of the y-axis, go to y-int. and do the opposite. (Down 3 on the y, left 1 on the x) (-1,-8)
6) Connect the dots.



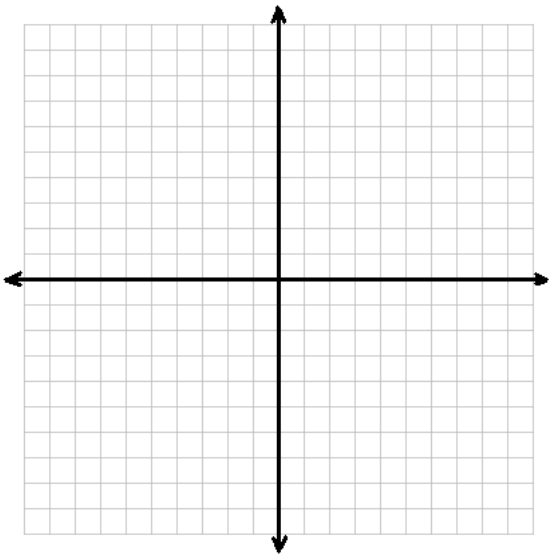
1) y = 2x + 1



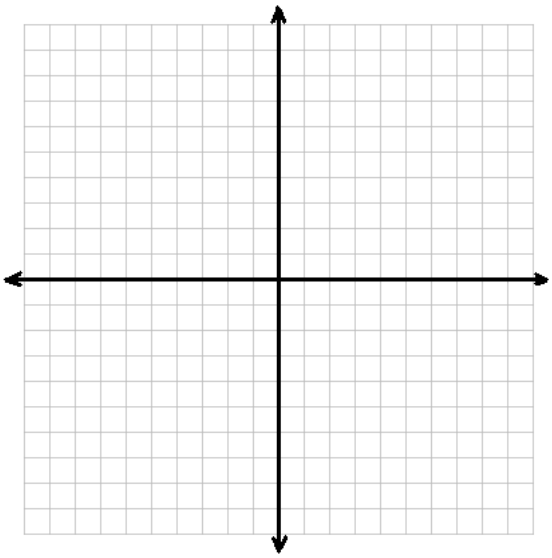
2) y = -4x + 5



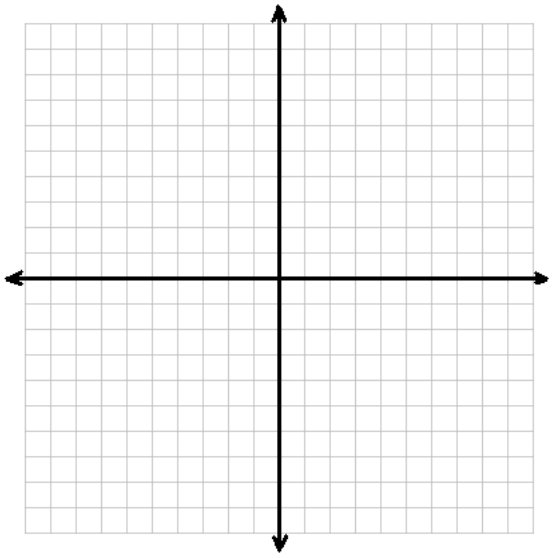
3) y = ½ x – 3



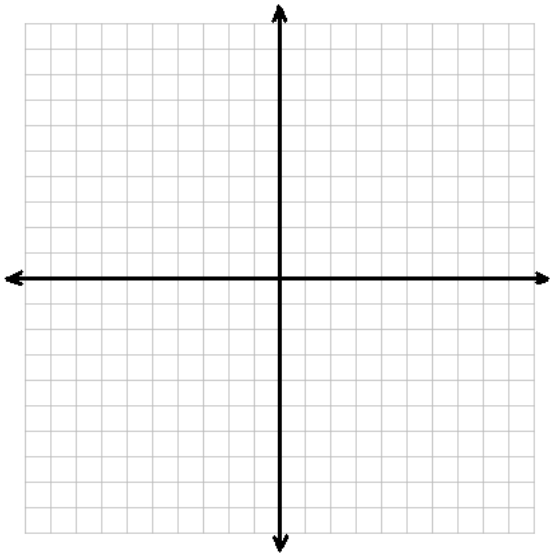
4) y= - ⅔x + 2



5) y = -x – 3

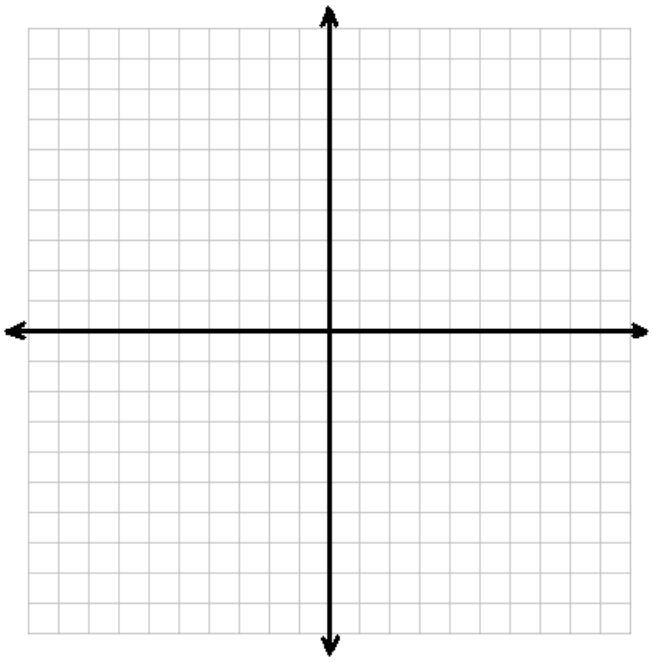


6) y= 5x

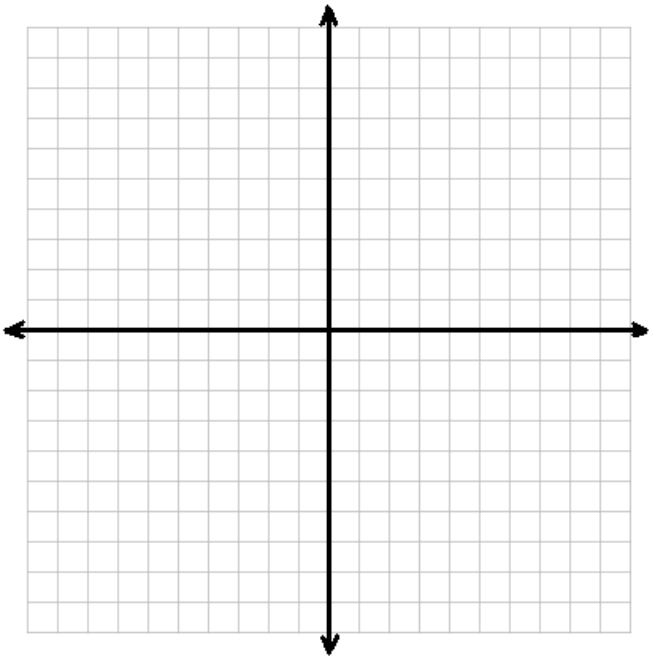


Q3 Quiz 3 Review

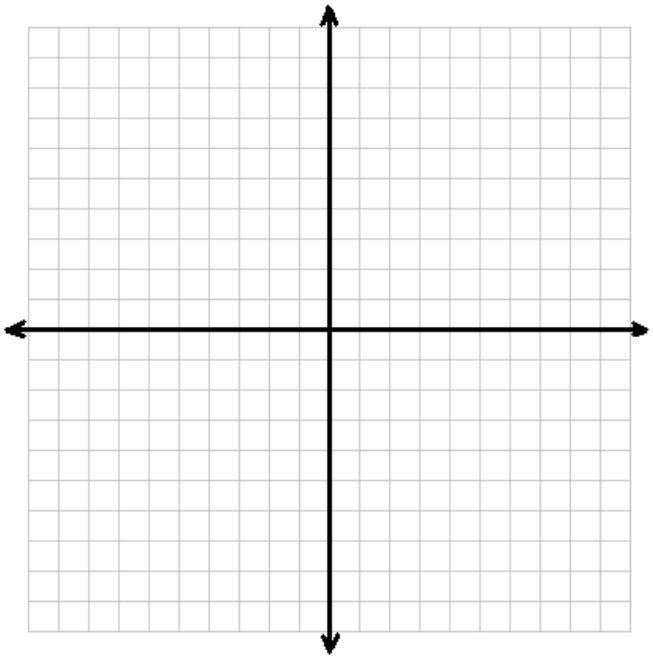
1) y = 4x - 6



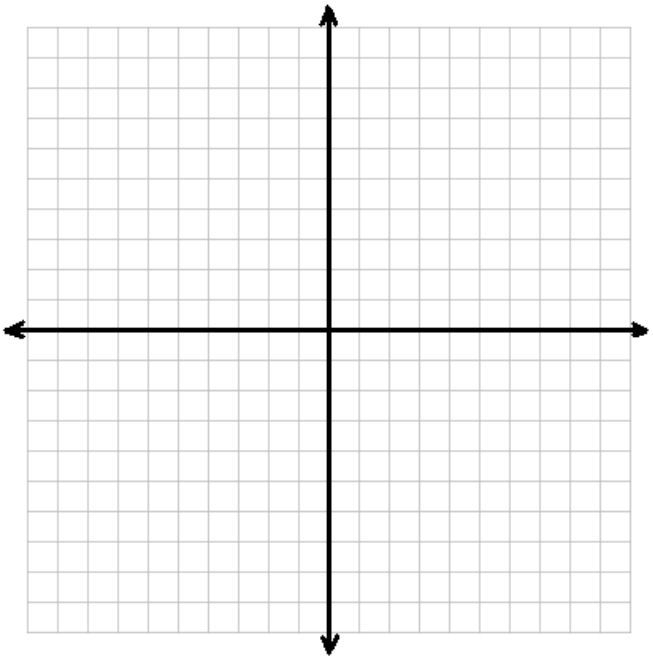
2) y = -2x + 7



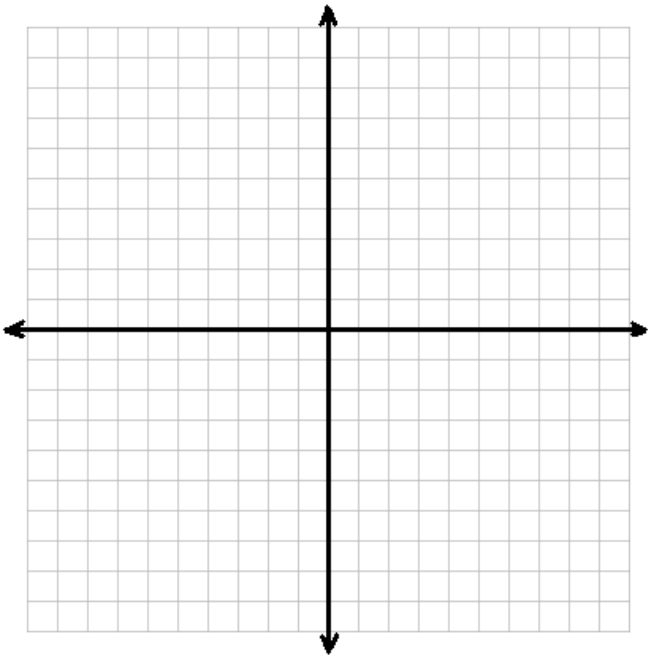
3) y = -x - 5



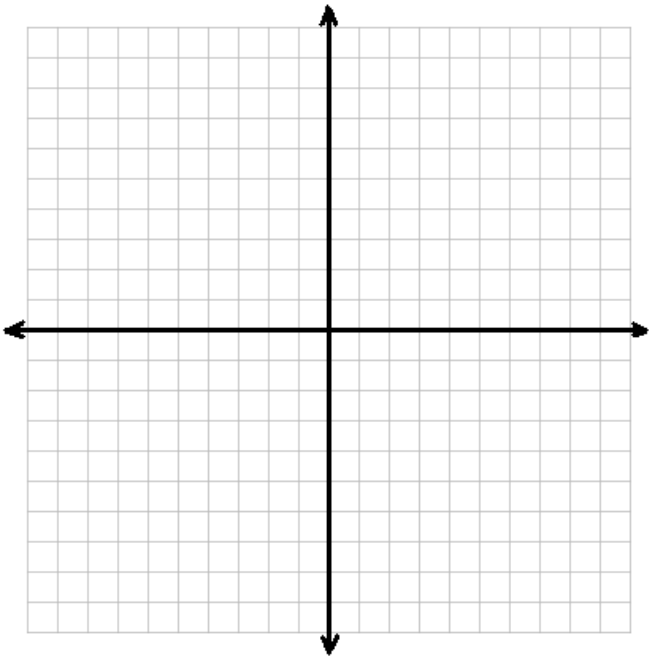
4) y = 5x + 5



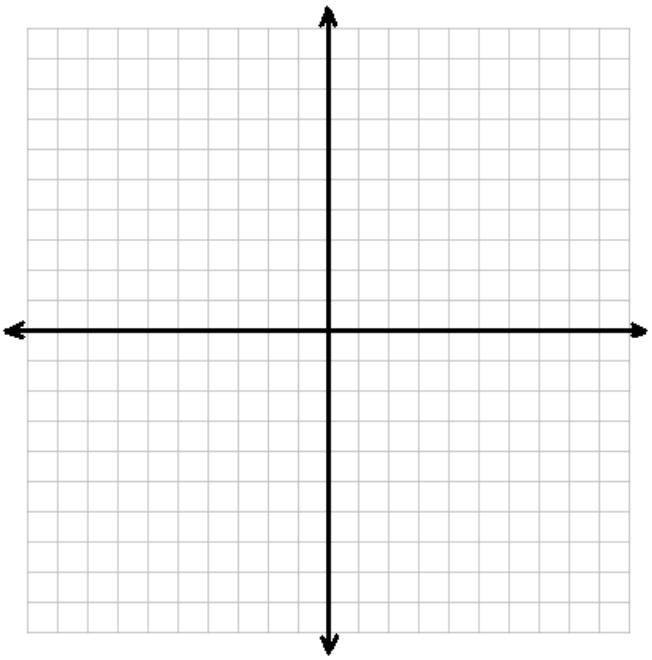
5) y = - ½ x - 7



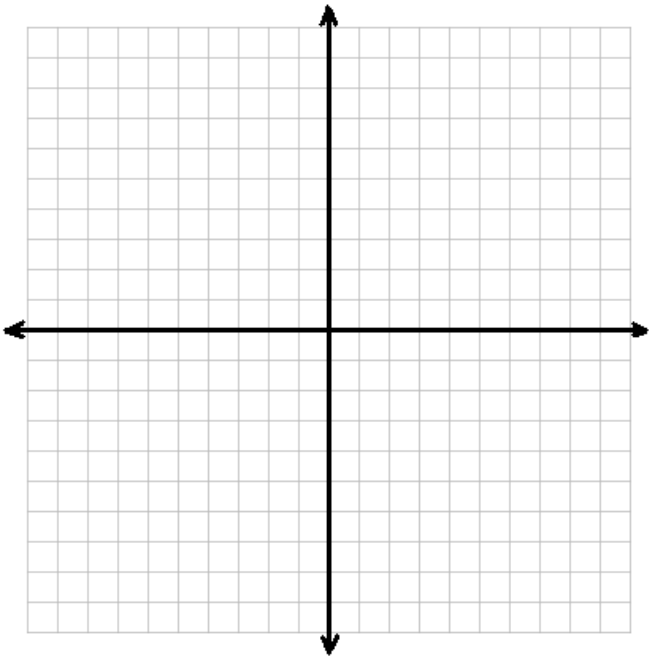
6) y = ⅗x - 4



7) y = ⅔x



8) y = - ⅓x + 4



*Finding the equation of a line in **slope intercept form***

(y=mx + b)

Example: Using slope intercept form [$y = mx + b$]

Find the equation in slope intercept form of the line formed by (1,2) and (-2, -7).

A. Find the slope (m):

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{(-7) - (2)}{(-2) - (1)}$$

$$m = \frac{-9}{-3}$$

$$m = 3$$

B. Use m and one point to find b:

$y = mx + b$

m= 3 x= 1 y= 2

$2 = 3(1) + b$

$2 = 3 + b$

$-3 \quad -3$

$-1 = b$

$y = 3x - 1$

Example: Using point slope form [$y - y_1 = m(x - x_1)$]

Find the equation in slope intercept form of the line formed by (1,2) and (-2, -7).

A. Find the slope (m):

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$m = \frac{(-7) - (2)}{(-2) - (1)}$$

$$m = \frac{-9}{-3}$$

$$m = 3$$

B. Use m and one point to find b:

$y - y_1 = m(x - x_1)$

m= 3 x= 1 y= 2

$y - (2) = 3(x - (1))$

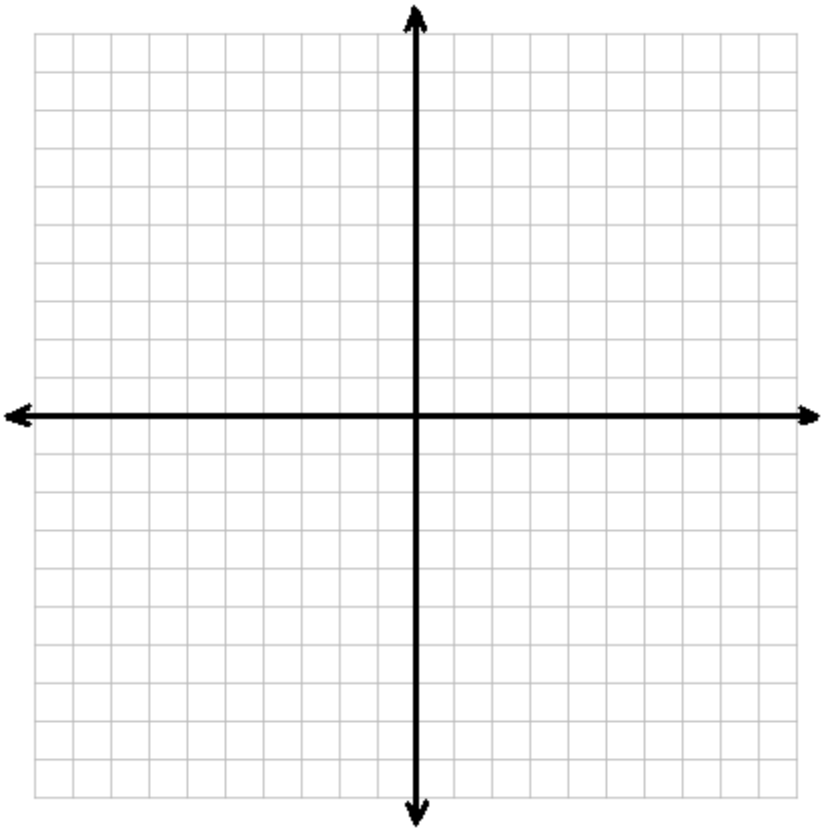
$y - 2 = 3x - 3$

$+2 \quad +2$

$y = 3x - 1$

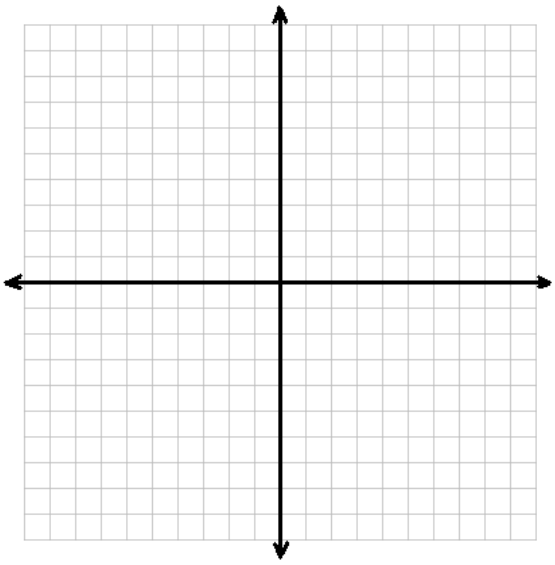
Find the equation in slope intercept form of the line formed by the given points. When you're finished, graph the equation on the give graph.

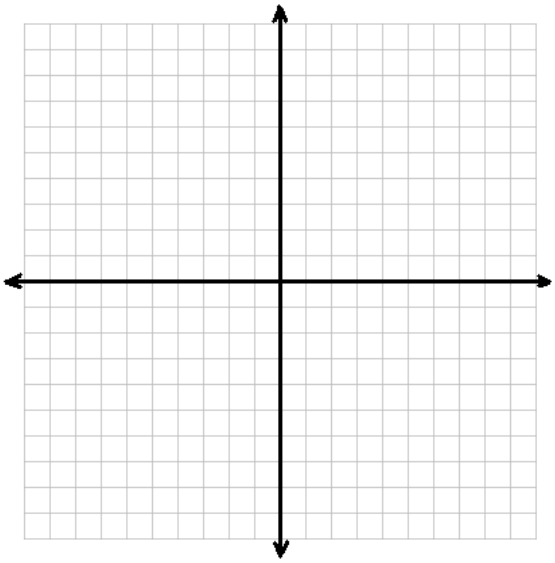
1) (4,-6) and (-8, 3)



2) (4,-3) and (9,-3)

3) (7,-2) and (7, 4)





III. **Special Slopes**

A. Zero Slope
* No change in Y
* Equation will be Y =
* Horizontal Line

B. No Slope (undefined slope)
* No change in X
* Equation will be X =
* Vertical Line

Point-Slope Form → $y - y_1 = m(x - x_1)$

Slope Intercept Form → $y = mx + b$ → *"y" is by itself*

Standard Form: → $Ax + By = C$ → *Constant (number) is by itself*

Given the slope and 1 point, write the equation of the line in: (a) point-slope form, (b) slope intercept form, and (c) standard form:

Example: m = ½ ; (-6,-1)

a) Point-Slope Form b) Slope intercept form c) Standard Form

1) m = -2; (-3,1)

a) Point-Slope Form b) Slope intercept form c) Standard Form

2) m = - ¾ ; (-8, 5)

Point-Slope Form b) Slope intercept form c) Standard Form

3) m = ⅔; (-6, -4)

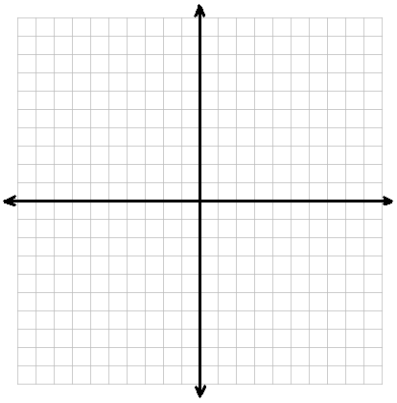
Point-Slope Form b) Slope intercept form c) Standard Form

4) m = -1 (5, -1)

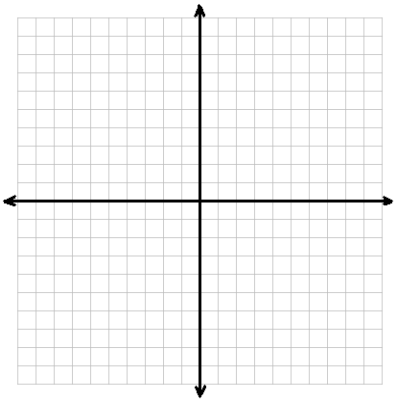
Point-Slope Form b) Slope intercept form c) Standard Form

Find equation in slope intercept form and graph:

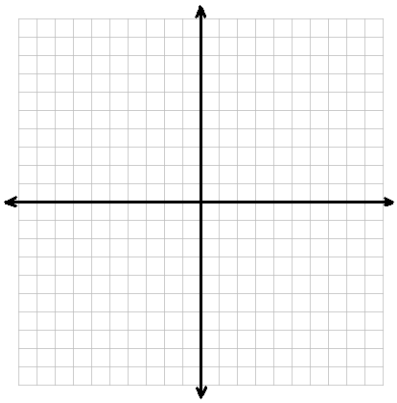
1) (3,-2)(-6,-8)



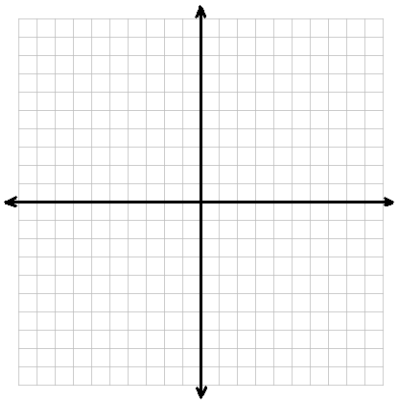
2) (-6,10) (9,-10)



3) (3,7) (3,-7)

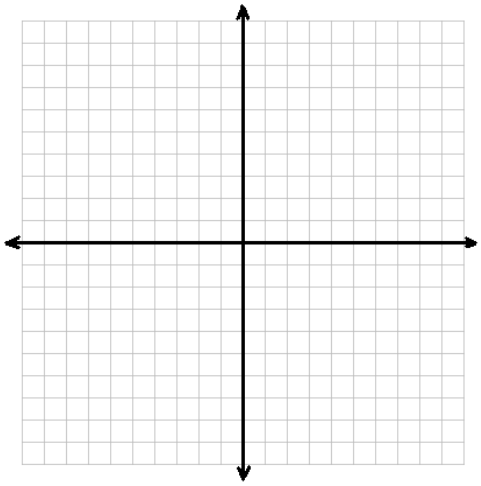


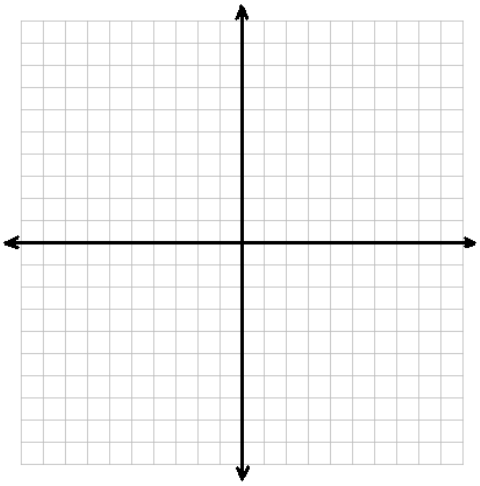
4) (7,-6)(-3,4)



5) (5,-9)(-5,-9)

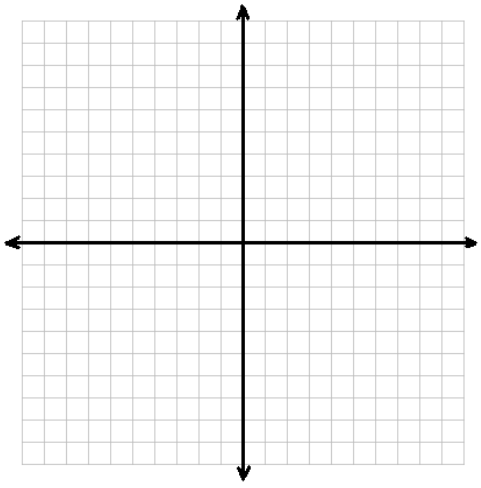
6) m= 4 (-2,-5)

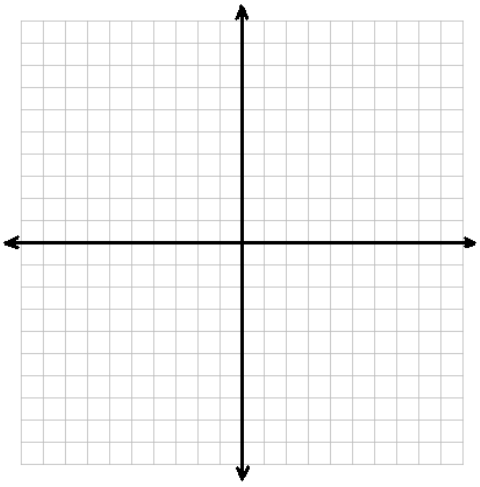




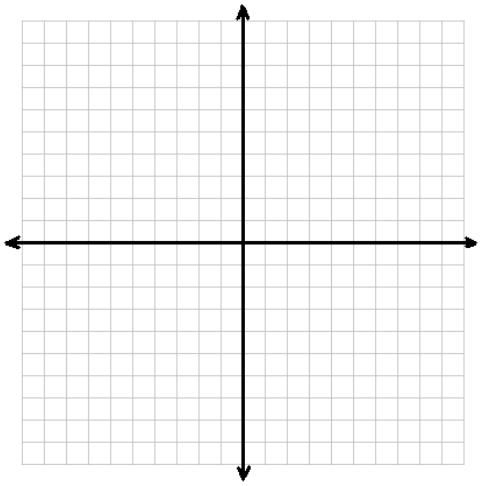
7) m= ⅔ (-6,-7)

8) m= $-\frac{3}{2}$ (8,-4)

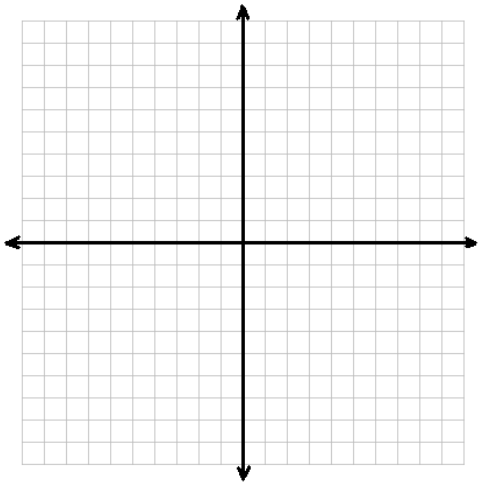




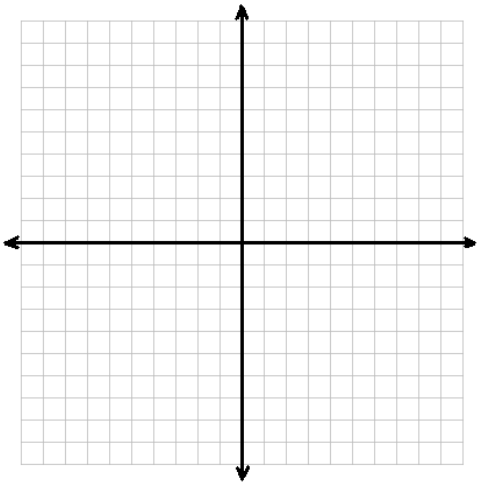
9) m = 0 (4,3)



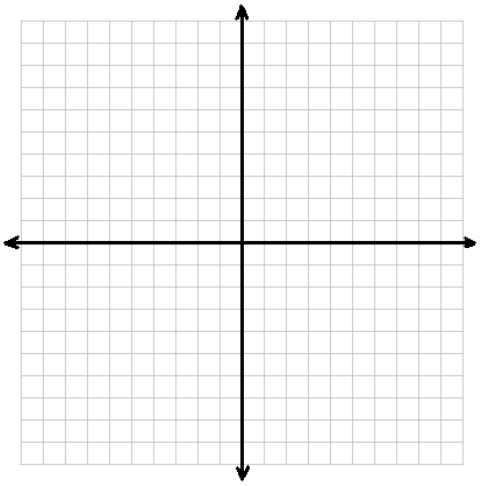
10) m = undefined (-6, 5)



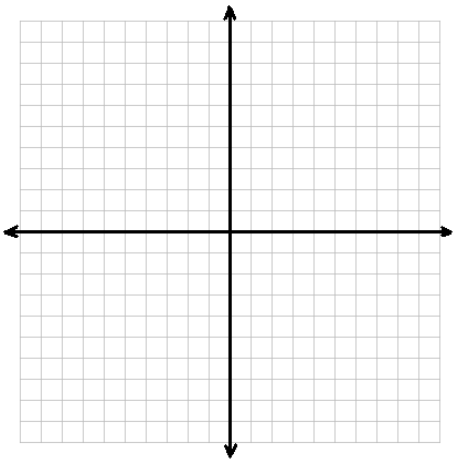
11) 16x -4y =36



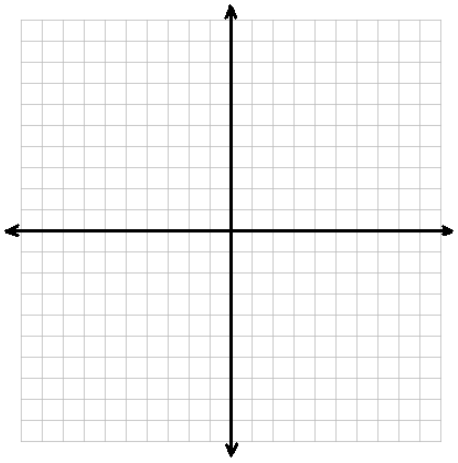
12) 8x+24y = 96



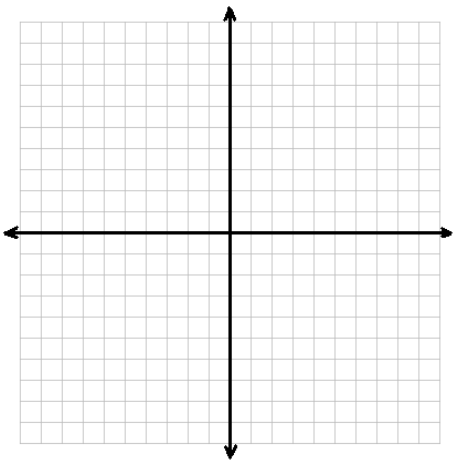
13) y+7=2(x+1)



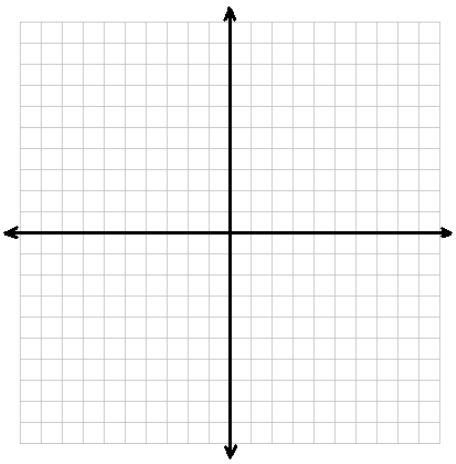
14) y+5=(2/5)(x+10)



15) y-7= ¾ (x-12)

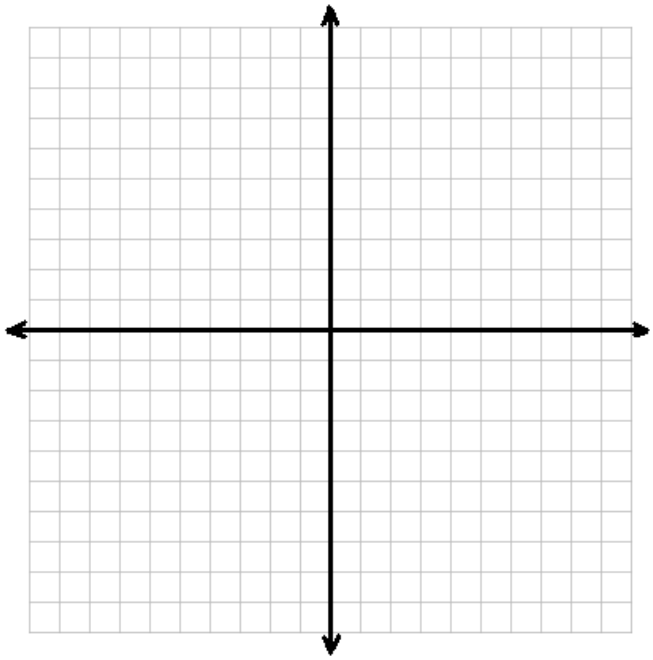


16) y-2=-3(x-2)

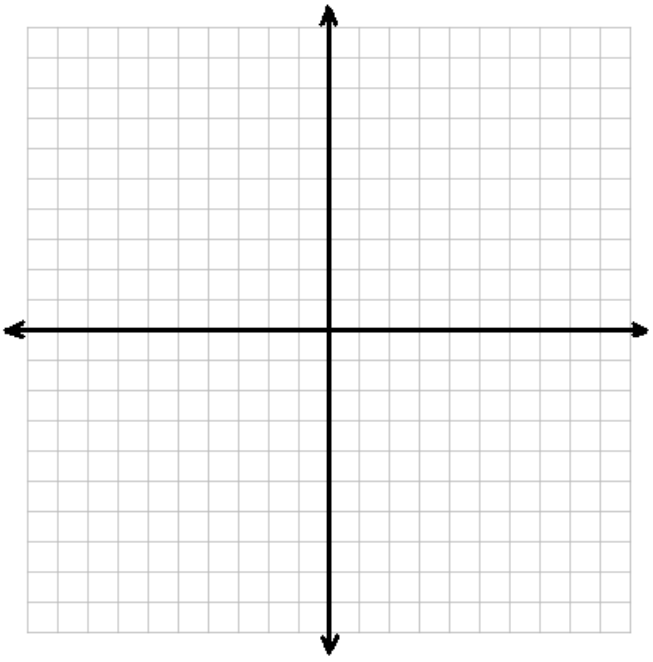


Q3 Quiz 4 Review

1) y - 2 = -3(x – 1)



2) 14x + 21y = -84



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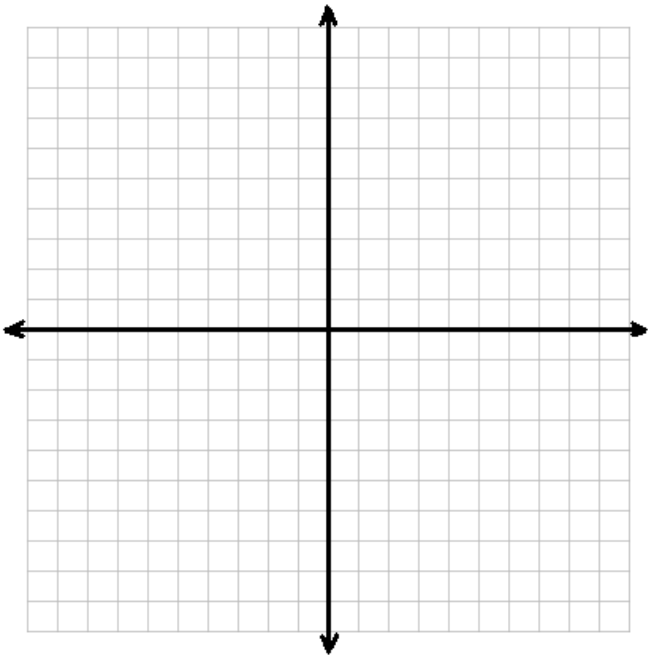
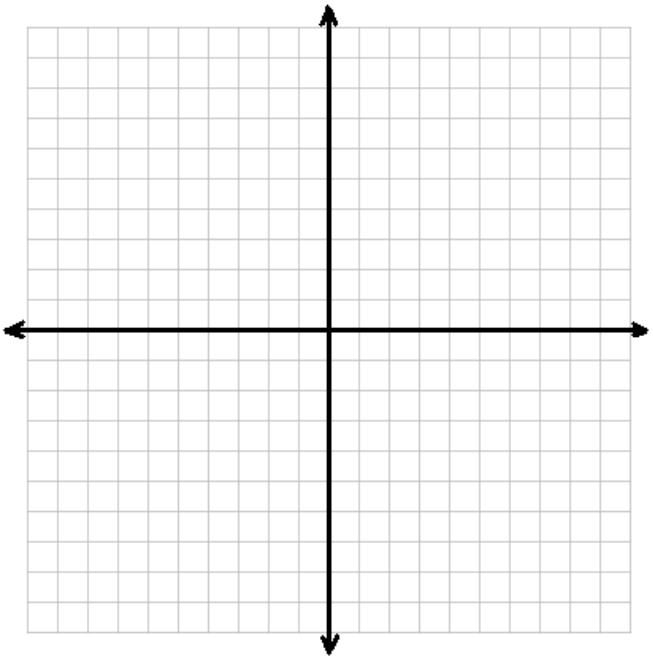
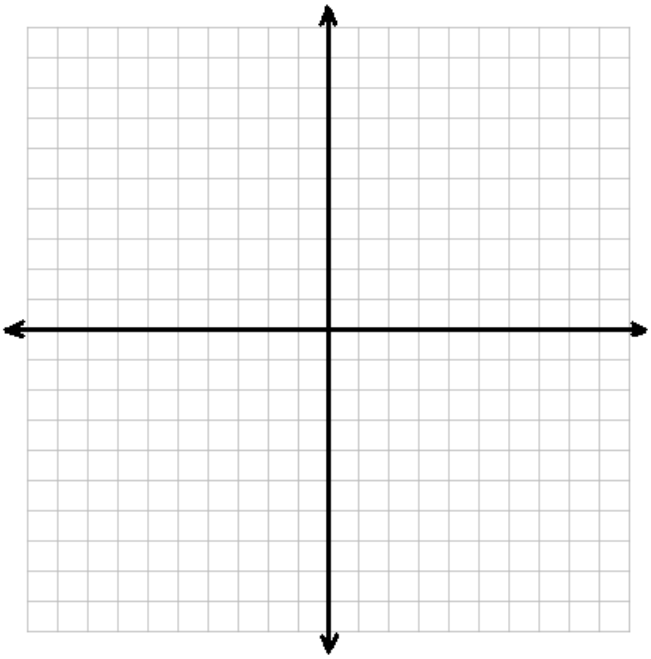
3) $y + 10 = 5(x + 2)$



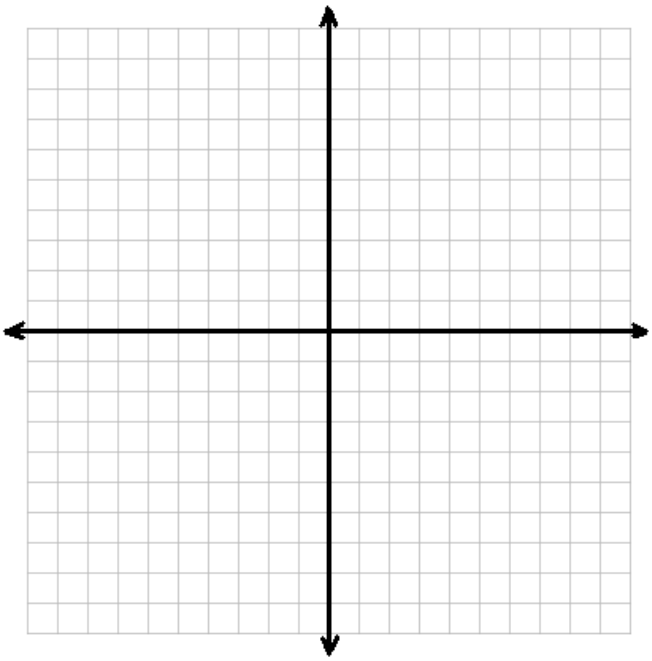
4) $y - 7 = \frac{1}{4}(x - 20)$



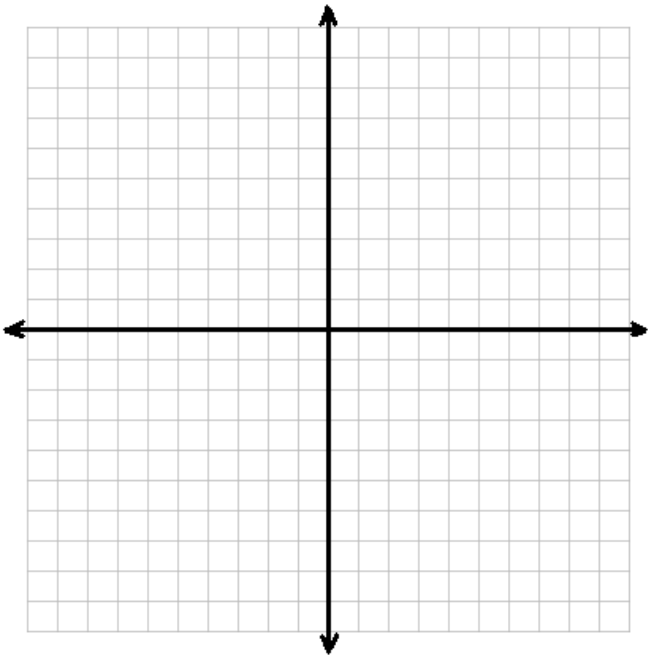
5) $8x - 8y = 56$



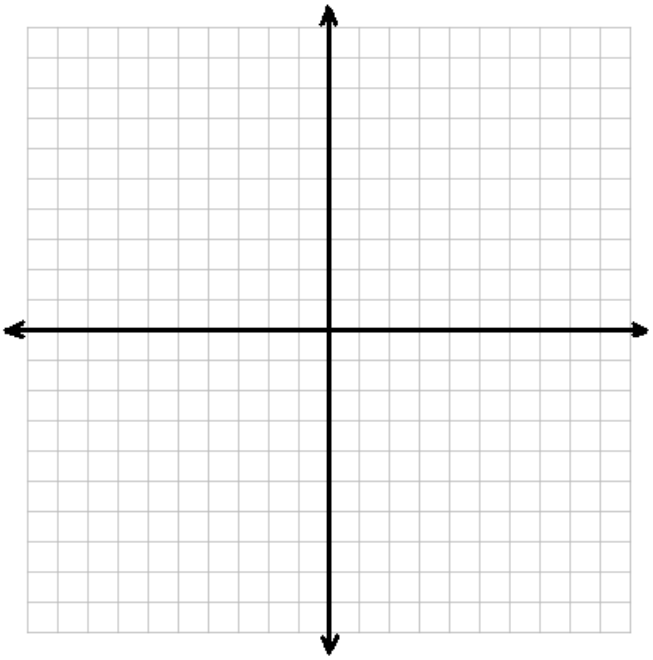
6) $y + 6 = -1(x - 3)$



7) 18x – 12y = -12



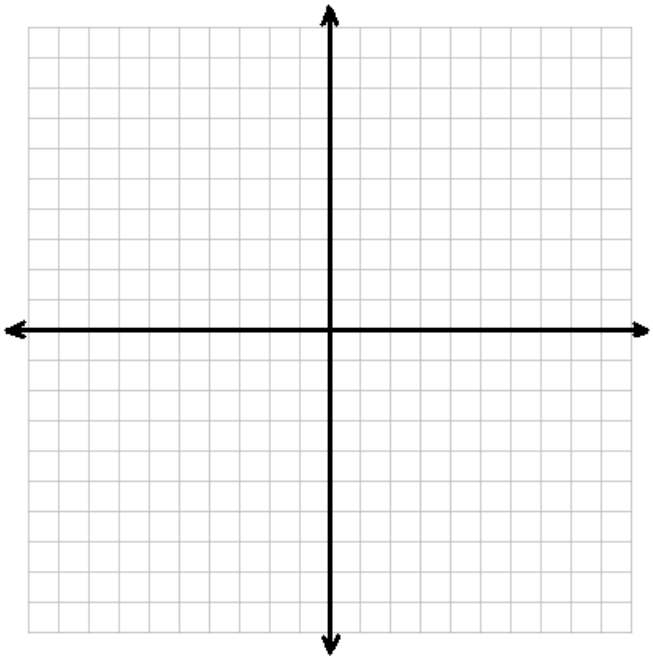
8) y – 15 = (-5/3)(x + 9)



Answers: 1) y = -3x + 5 ***2) y = - ⅔ x - 4*** ***3) y = 5x*** ***4) y = ¼ x + 2***
5) y = x - 7 ***6) y = - x – 3*** ***7) y = (3/2)x - 1*** ***8) y = -(5/3)x***

Graph both of the lines on the same set of axis:

$y = -2x + 6$ $y = -2x - 5$



IV. Parallel and Perpendicular Lines:

A. Parallel Lines

* Do not intersect
* Have *same slopes*

For the given line, find a line that is parallel and passes through the given point and graph

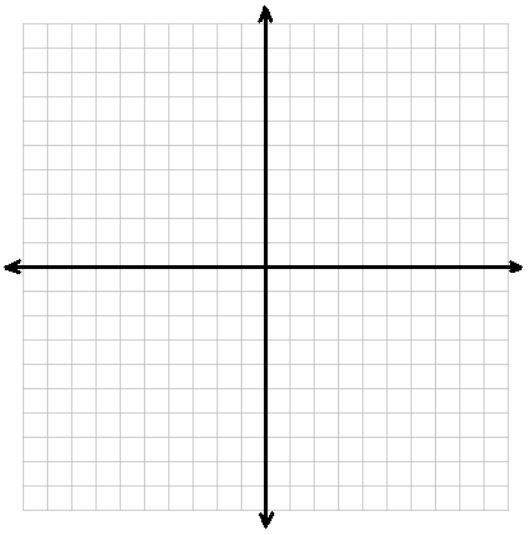
Given Line:	Parallel:	Given Line:	Parallel:
7) $y = \frac{1}{3}x + 4$	(6,1)	8) $y = 4x - 5$	(2,13)

Given Line:	Parallel:	Given Line:	Parallel:
9) $y = -\frac{2}{3}x + 2$	(-9,2)	10) $y = -5x + 6$	(4,-27)

Practice Problems: a) Use the two points to find the equation of the line.
b) For the line found in part a, find a line that is parallel and passes through the given point.
c) Graph both lines on the same set of axis.

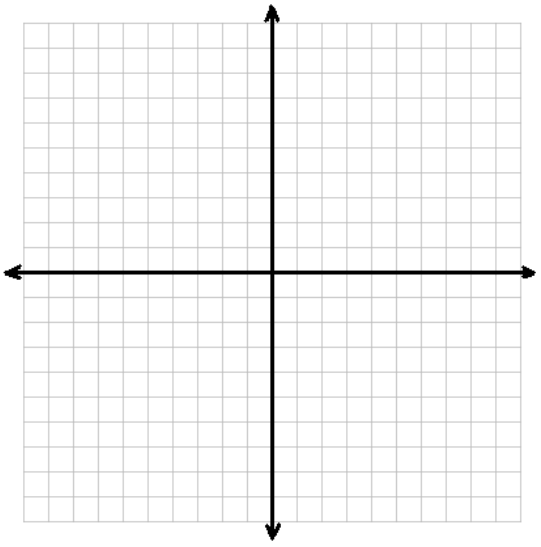
Given Line:
1) (-5, 13) (3, -3)

Parallel:
(4,-10)



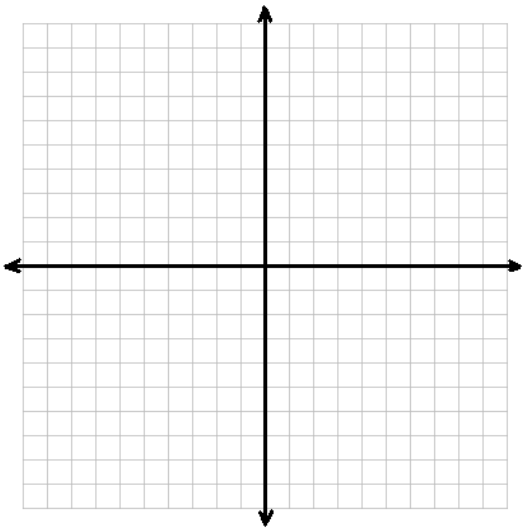
Given Line:
2) (-6,0) (3,6)

Parallel:
(6,3)



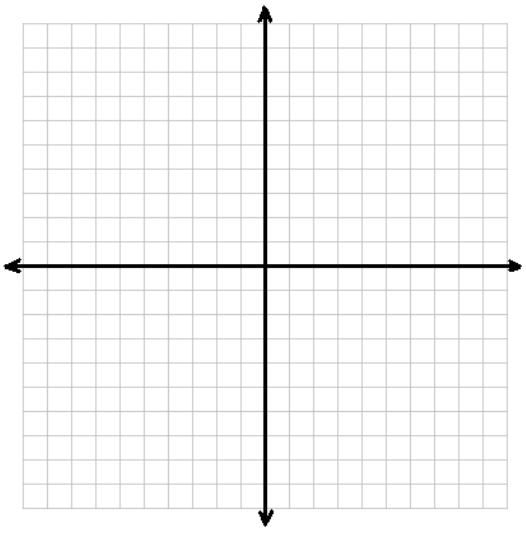
Given Line:
3) (2,6)(-3,-19)

Parallel:
(5,30)



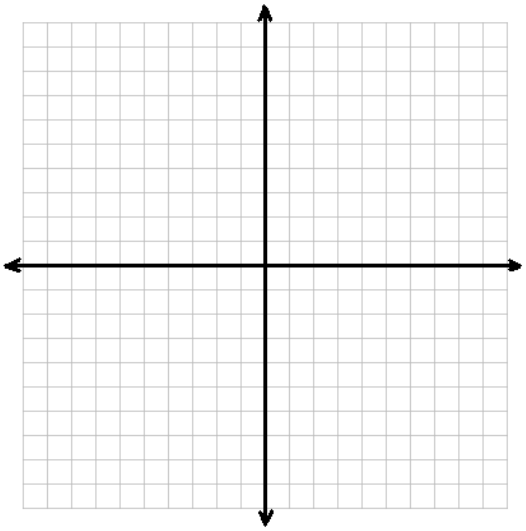
Given Line:
4) (-4,3) (-8,6)

Parallel:
(-4, 10)



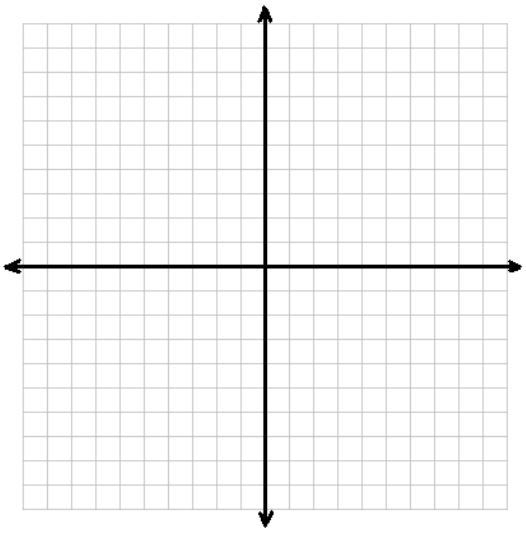
Given Line:
5) (2,-5) (-2, -5)

Parallel:
(8,-2)



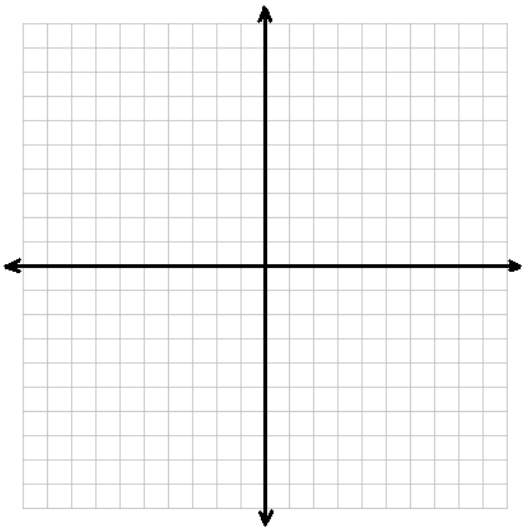
Given Line:
6) (-9,-11)(6,9)

Parallel:
(-3,-9)



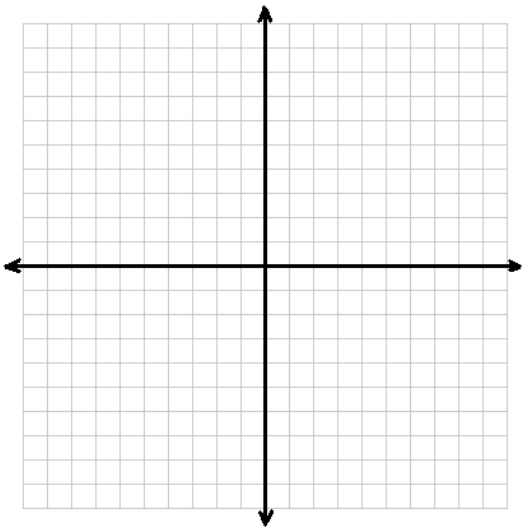
Given Line:
7) (8,-3) (-4,9)

Parallel:
(-2, 1)



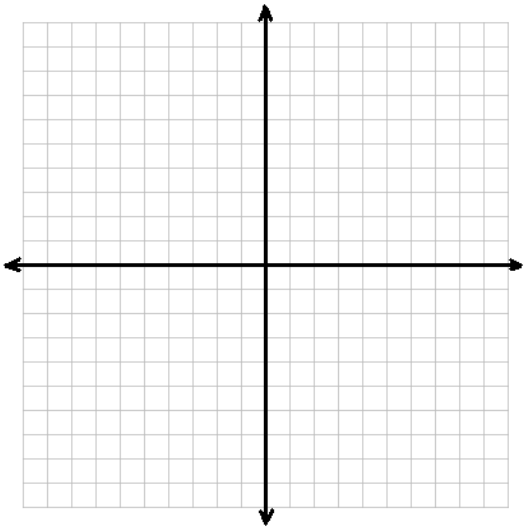
Given Line:
8) (3,6)(3,-6)

Parallel:
(7,-3)



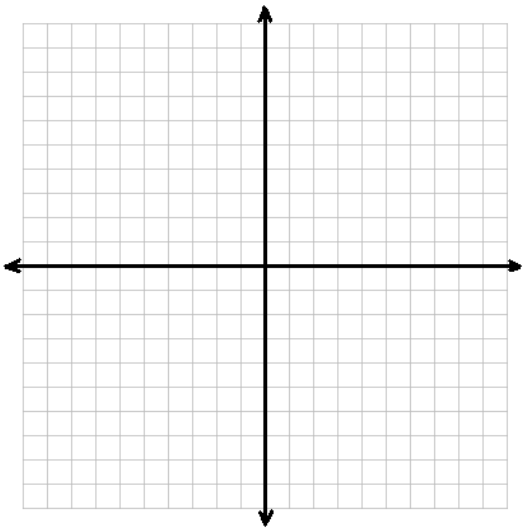
Given Line:
9) (4,-3)(-6,-8)

Parallel:
(6,7)



Given Line:
10) (2,4)(-6,-12)

Parallel:
(-3,-5)



11) Find the equation of the line parallel to y = 3x – 2, passing through (-2, 1).

12) Find the equation of the line parallel to y = -½x – 5, passing through (-2, 7)

13) Find the equation of the line parallel to y = -¼ x + 2, passing through (-8, 4)

14) Find the equation of the line parallel to y = (3/2)x + 6, passing through (-6, -11)

15) Find the equation of the line parallel to y = -5, passing through (2,7)

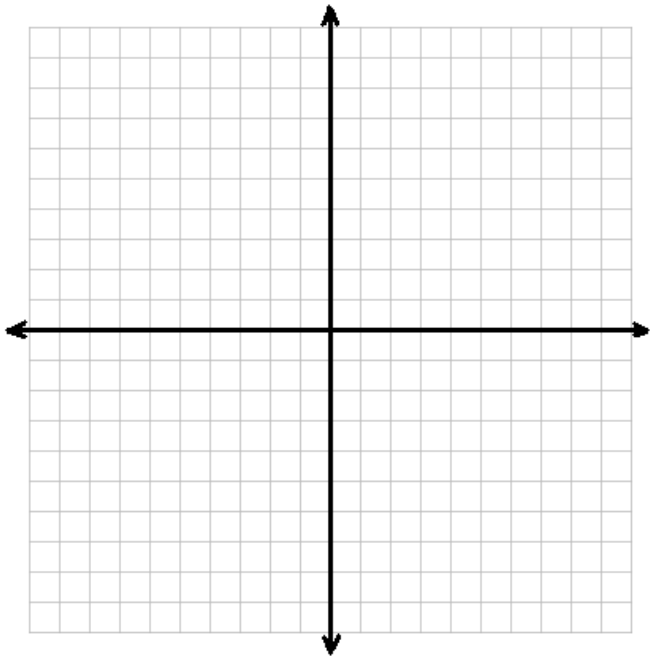
16) Find the equation of the line parallel to x = 5, passing through (6, -4).

Q3 Quiz 5 Review

FOLLOW REQUIRED FORMAT AND SHOW ALL PROPER WORK!
a) Use the two points to find the equation of the line.
b) For the line found in part a, find a line that is parallel and passes through the given point.
c) Graph both lines on the same set of axis.

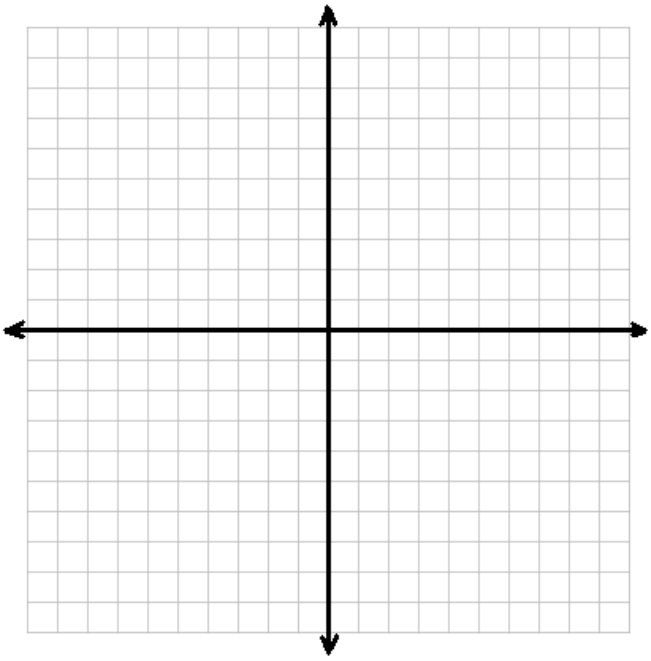
Given Line:
1) (-4, 13) (3, -8)

Parallel:
(4,-17)



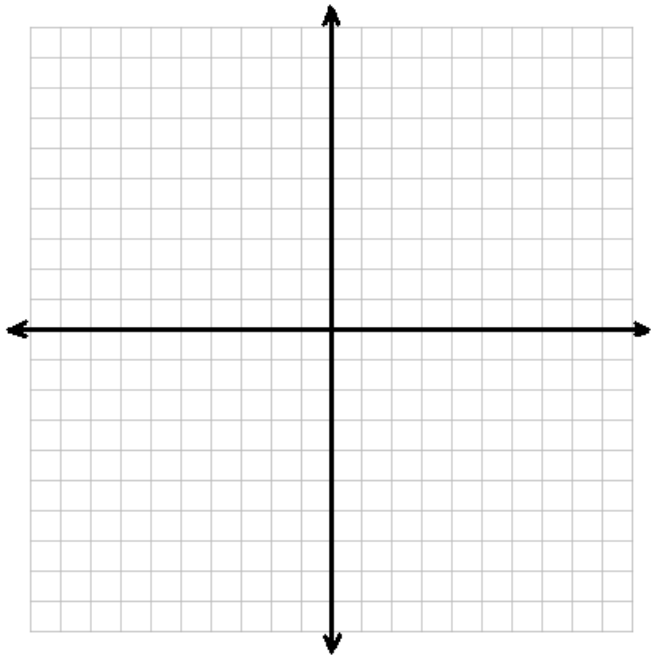
Given Line:
2) (8,1) (-4,-5)

Parallel:
(-6,2)



Given Line:
3) (5,4) (-4,4)

Parallel:
(-6,-7)



For #'s 4-7, just find the equation. You do not have to graph.

4) Find the equation of the line parallel to $y = -\frac{3}{5}x - 2$, passing through (-5, 7).

5) Find the equation of the line parallel to $y = 4x - 5$, passing through (-4, 9)

6) Find the equation of the line parallel to $y = 2$, passing through (-8, -9)

7) Find the equation of the line parallel to $x = 5$, passing through (-6, -11)

Solving Systems of Equations Graphically

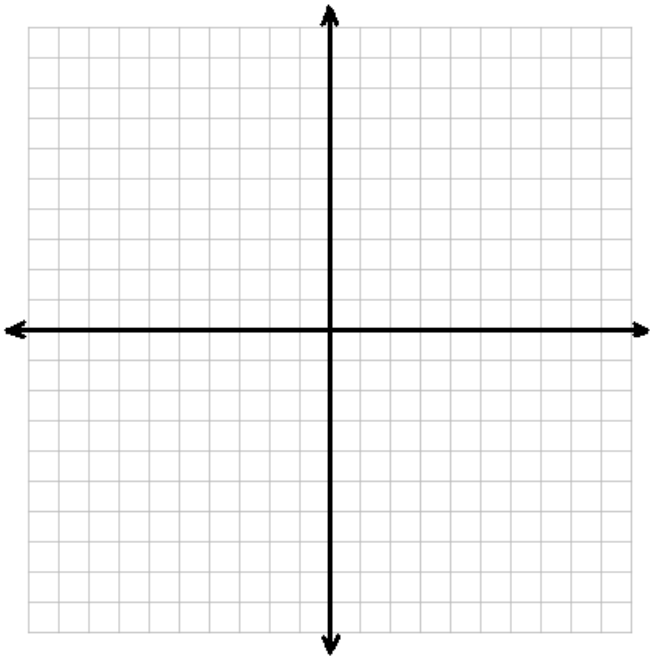
A system of equations is a collection of two or more equations with a same set of unknowns. In solving a system of equations, we try to find values for each of the unknowns that will satisfy every equation in the system. When solving a system containing two linear equations there will be **one ordered pair (x,y)** that will work in both equations.

To solve such a system graphically, we will graph both lines on the same set of axis and look for the **point of intersection.** The point of intersection will be the one ordered pair that works in both equations. We must then **CHECK** the solution by substituting the x and y coordinates in **BOTH ORIGINAL EQUATIONS**.

1) Solve the following system graphically:

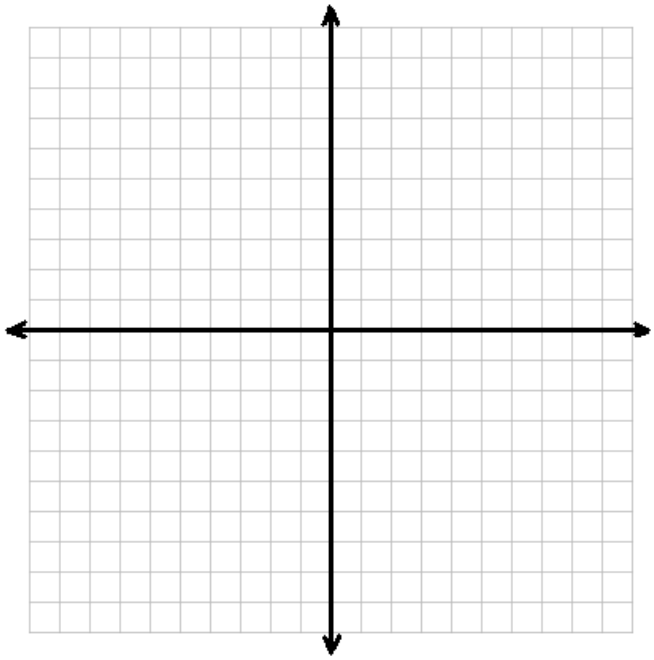
$y = 2x - 5$

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

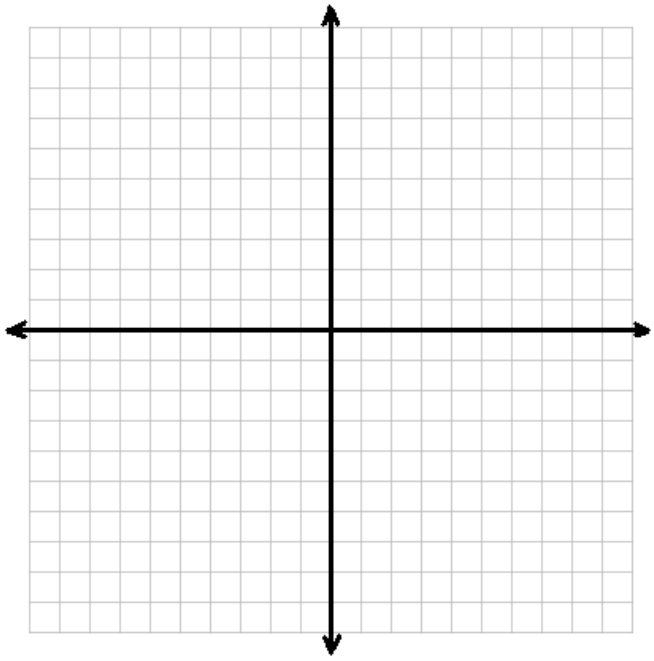


Solve each of the systems of equations graphically:

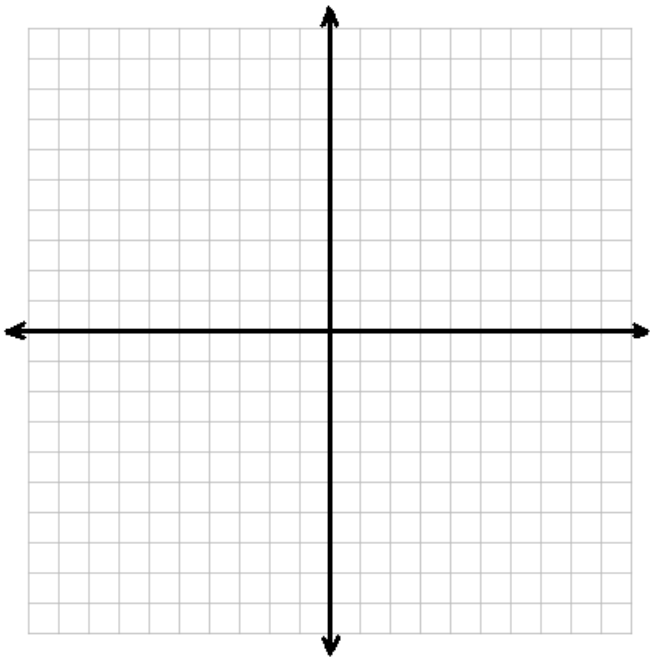
2) $y + 1 = -3(x - 1)$
$7x + 7y = 42$



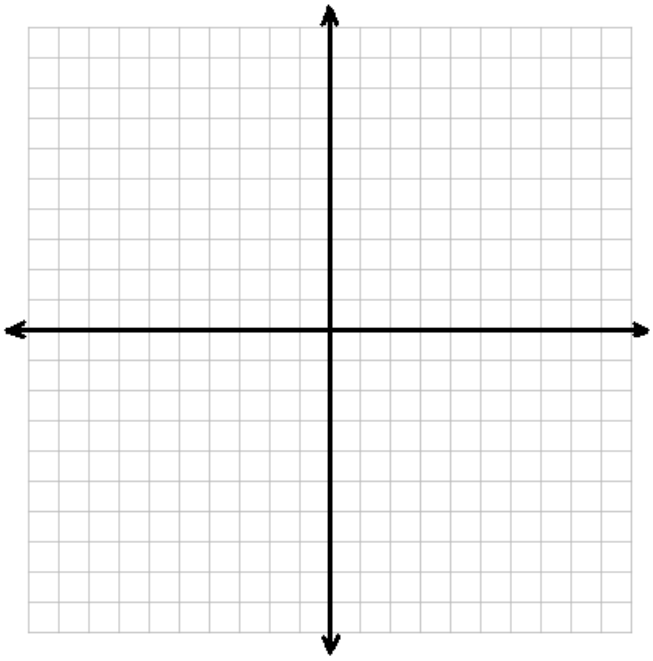
3) $y - 9 = \frac{3}{4}(x - 12)$
$6x + 12y = -60$



4) $12x - 8y = 48$
$y - 4 = -2(x - 2)$

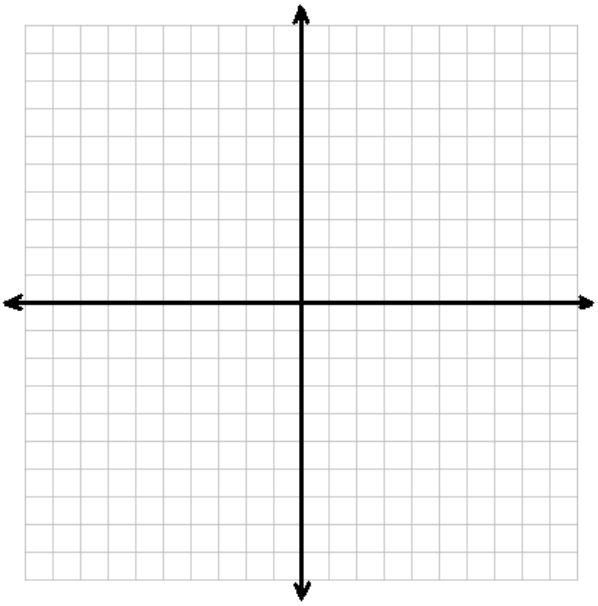


5) $y + 5 = 2(x + 4)$
$y - 10 = -\frac{1}{2}(x + 4)$

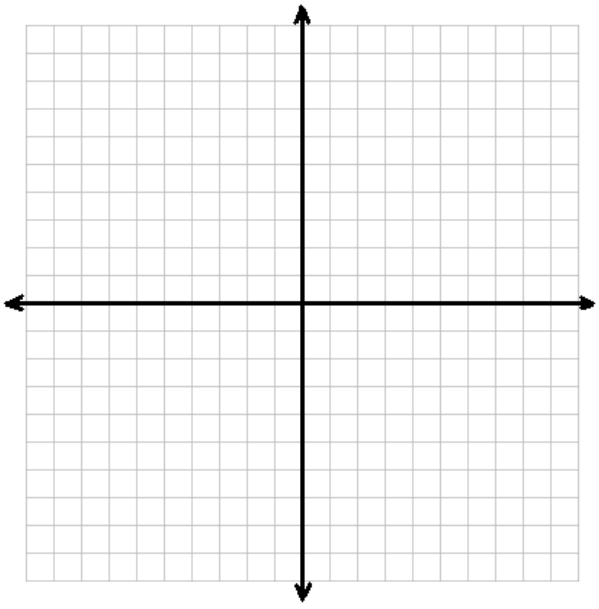


Solve each system graphically and check:

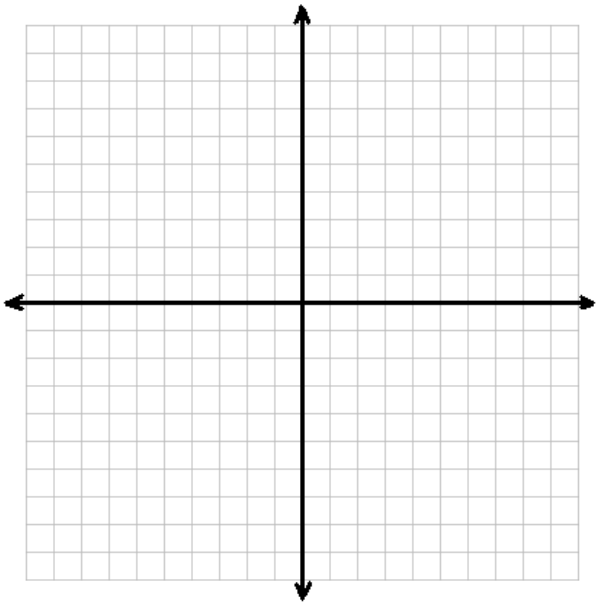
6) $y = -4x - 5$
$y = 2x - 7$



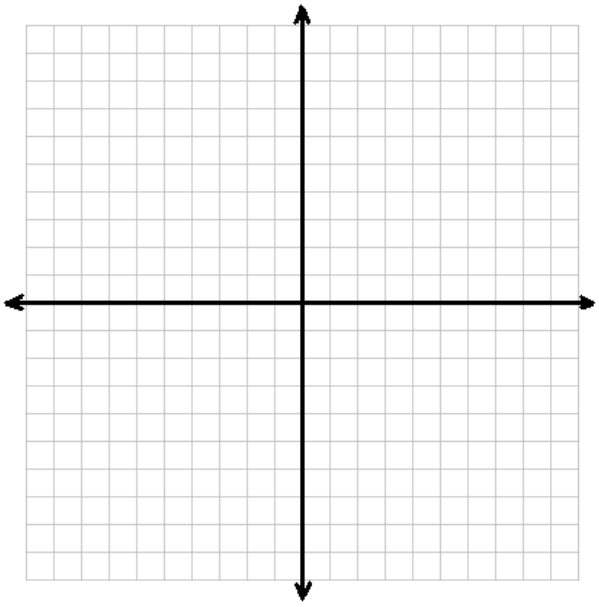
7) $6x + 3y = 21$
$12x + 16y = -48$



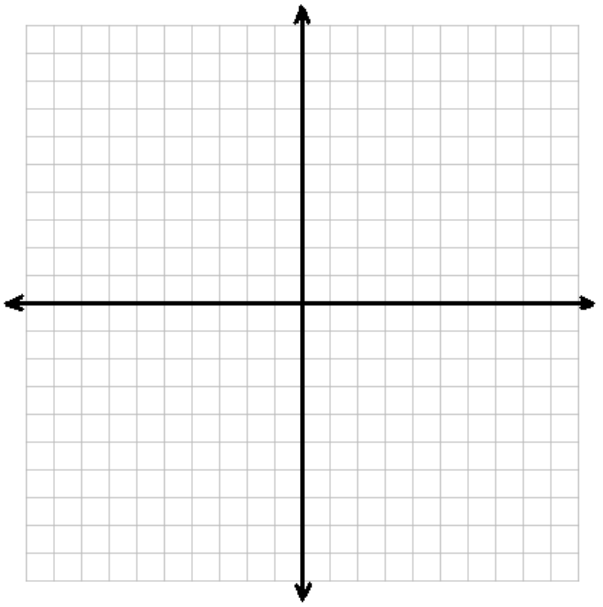
8) $12x - 6y = -6$
$16x - 8y = 40$



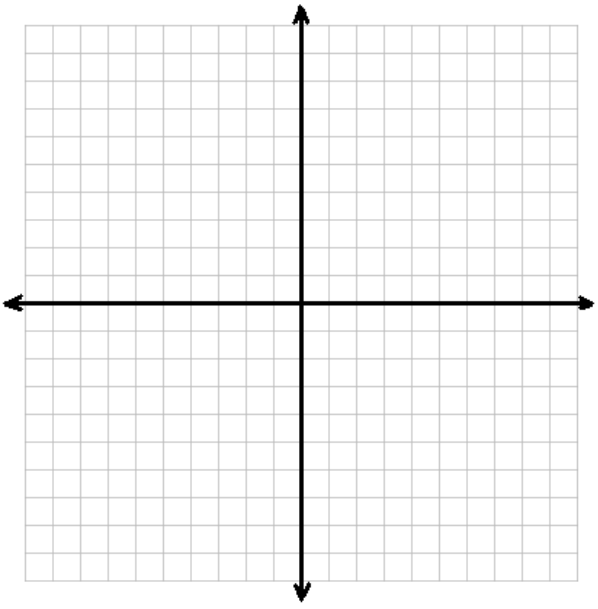
9) $y = -4$
$x = 7$



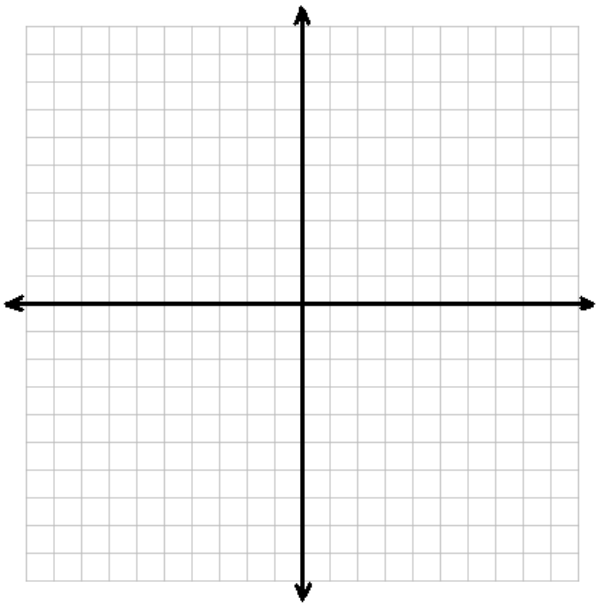
10) y-2= (3/5)(x-10)
y+11 =2(x+7)



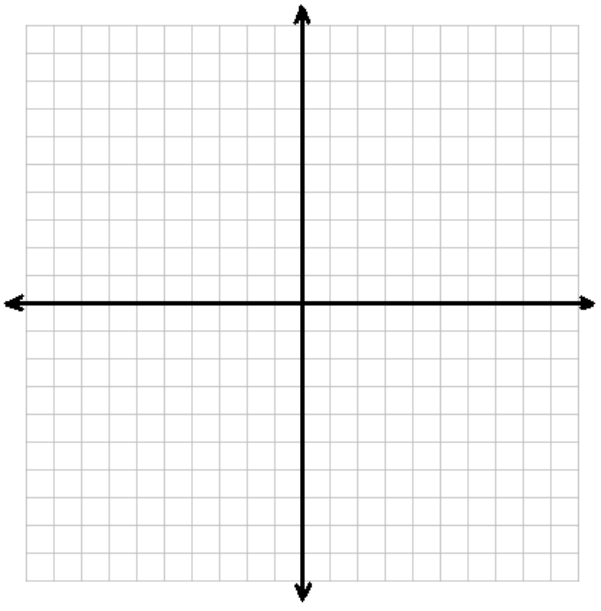
11) 6x + 9y = 45
9x +15y = 75



12) $x = 5$
$y-12 = -3(x+2)$

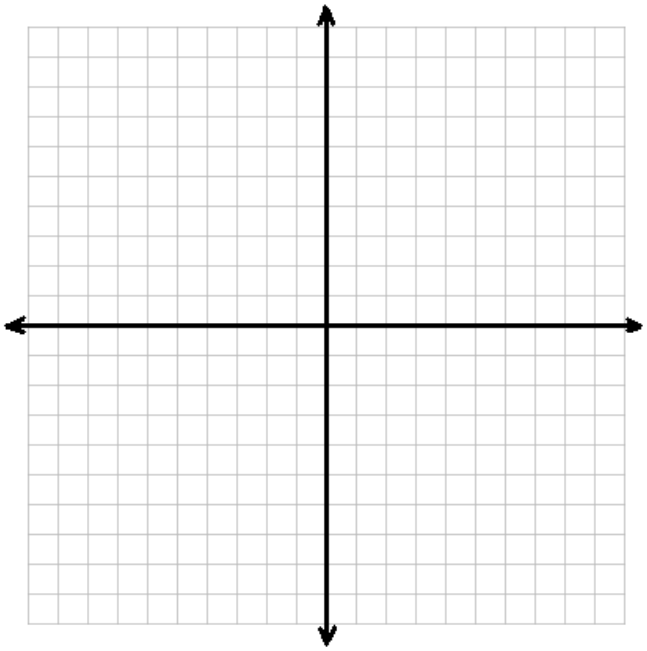


13) $9x - 18y = 126$
$y = -4$

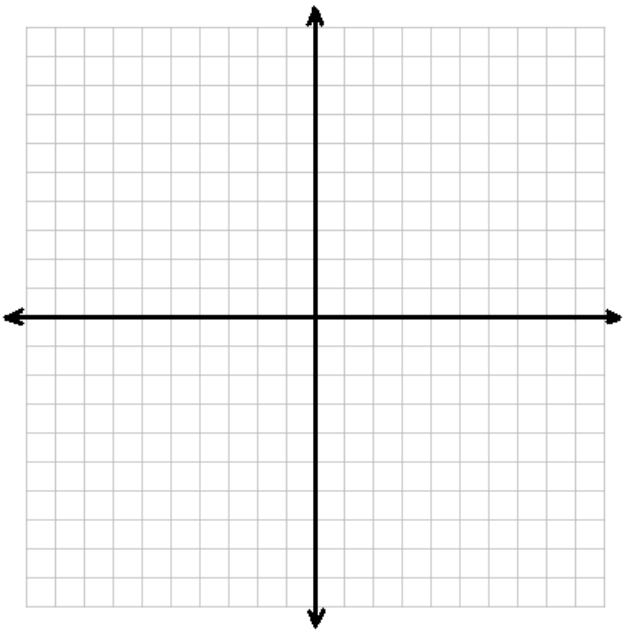


Q3 Quiz 6 Review

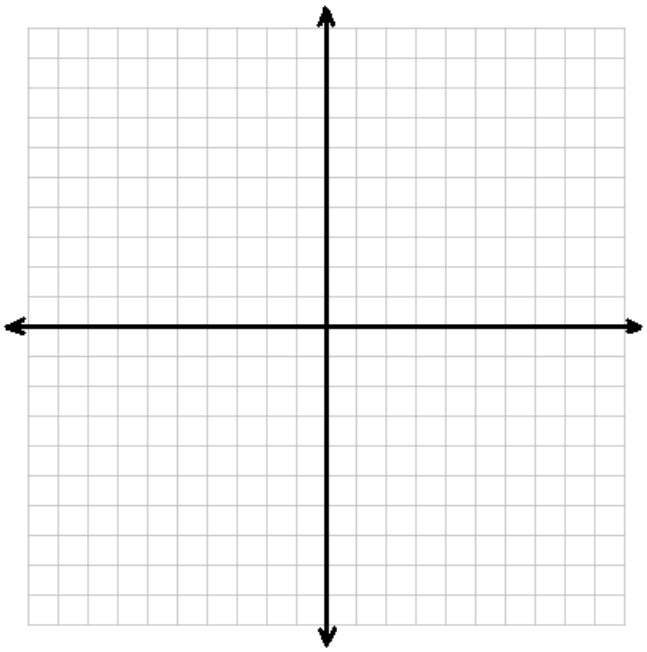
1) $y = 2x + 6$
$y = -\frac{1}{2}x - 4$



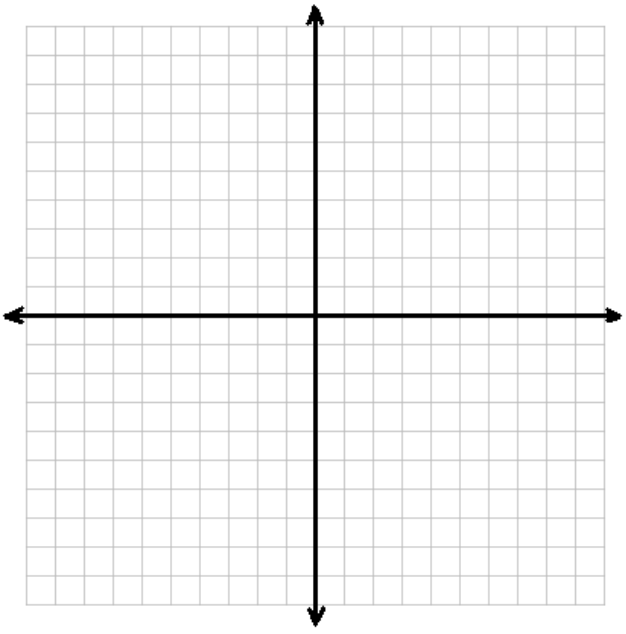
2) $15x - 15y = -45$
$y - 2 = -3(x + 1)$



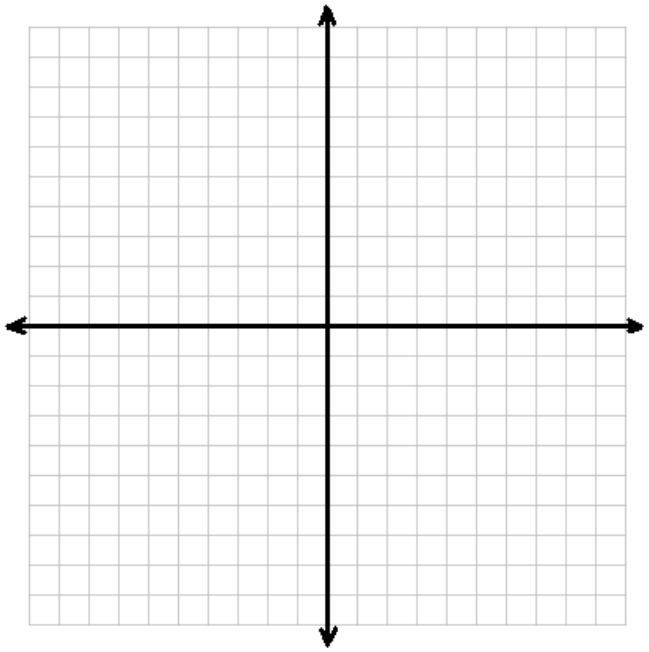
3) $y + 3 = (-2/3)(x - 3)$
$y + 1 = -1(x + 2)$



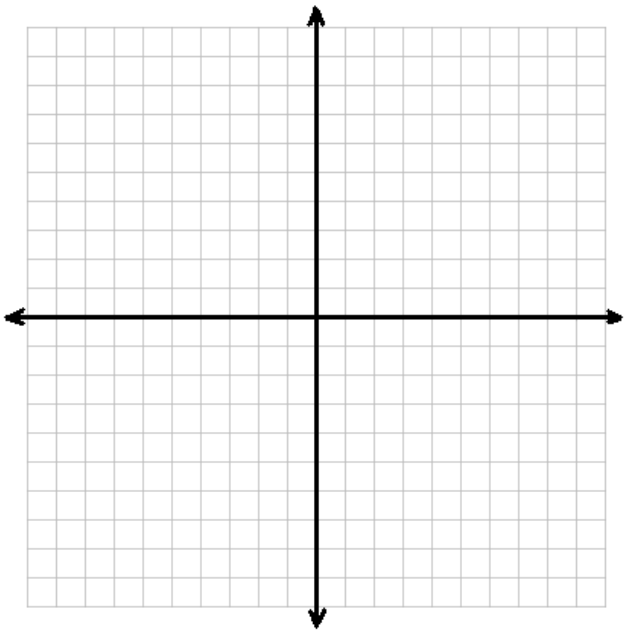
4) $24x - 18y = -18$
$y = -7$



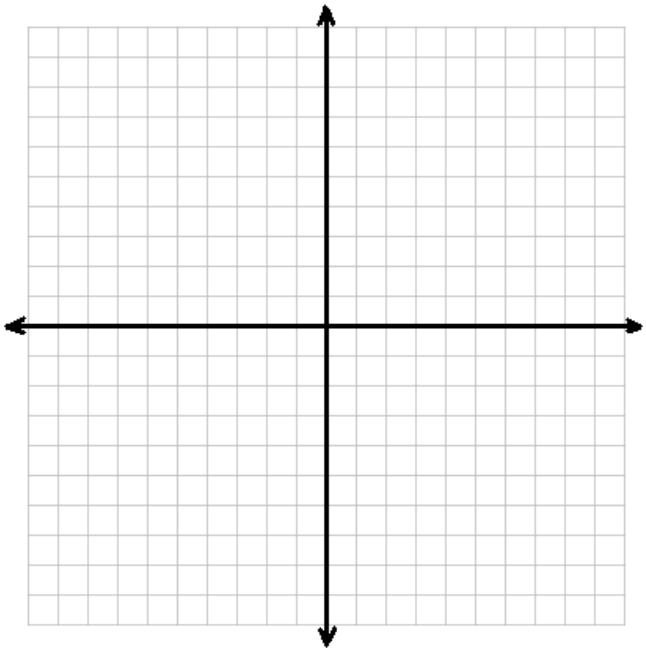
5) $y + 2 = (-3/4)(x - 8)$
$17x - 34y = 204$



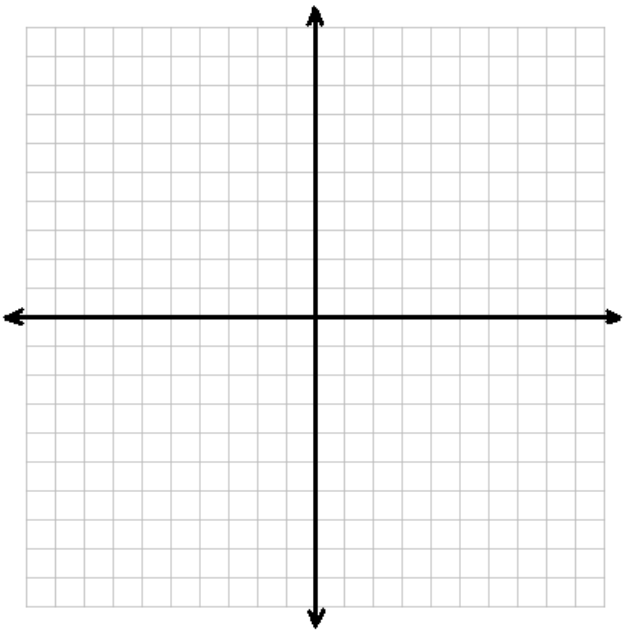
6) $x = -6$
$y + 15 = (5/3)(x + 9)$



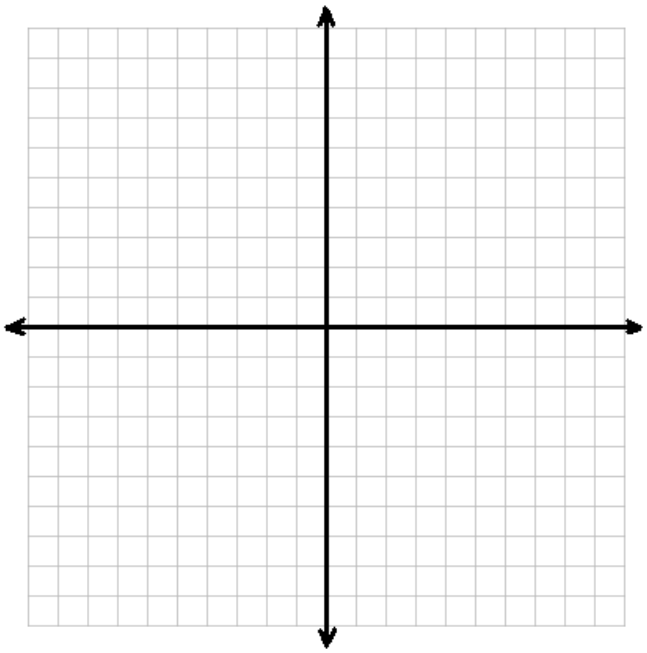
7) $y - 5 = \frac{1}{4}(x - 4)$
$45x - 15y = 105$



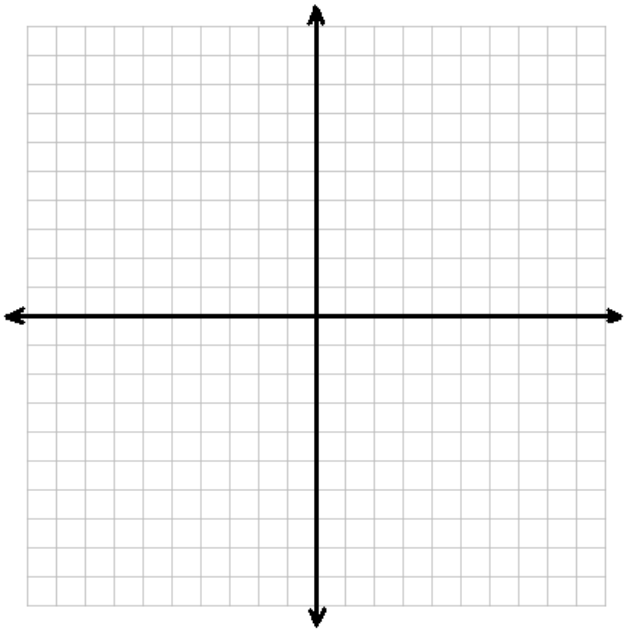
8) $24x - 12y = -72$
$y - 2 = 2(x + 2)$



9) $11x + 44y = -176$
$y - 3 = -\frac{1}{4}(x + 4)$



10) $y + 4 = (2/3)(x + 12)$
$25x + 50y = -150$



Answer Key:

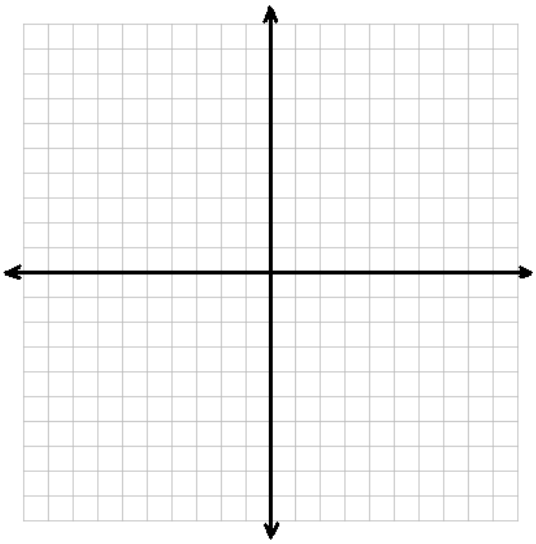
1) (-4,-2)	***2) (-1,2)***	***3) (-6,3)***	***4) (-6, -7)***	***5) (8,-2)***
6) (-6,-10)	***7) (4,5)***	***8) Many Solutions***	***9) No Solution***	***10) (-6,0)***

Find x if y = -12:

$y = -12$
$7x + 5y = 31$

Solve graphically:

1) $16x - 32y = 224$
$y = 2x - 1$



Solve the system algebraically:
2) 16x - 32y = 224
y = 2x – 1

Solving Systems of Equations Algebraically

In order to solve for two variables, you need to have two equations. If you only have one equation there are an infinite amount of **ordered pairs (x,y)** that will work. For example:

4x – 2y = 16 you can have x = 4 and y = 0 (4,0) and (2, -2) and (0, -4) and an infinite amount of others. To be able to solve for a single ordered pair, you need a second equation.

When we introduce the second equation, we will be able to solve for a single ordered pair that will work in both equations. There are two ways to solve a system of equations (algebraically and graphically). We will focus on solving algebraically. There are two methods of solving algebraically (substitution and elimination). The key to both of them is changing one (or both) equations so there is only one variable to solve for. Then you follow all the rules of solving for the one variable. Then plug the value back into one of the original equations to find the value of the second variable. Always state your answer as an ordered pair.

SUBSTITUTION

Example: x = 3y + 8
5x + 2y = 6

Substitute 3y +8 for the x in the 2nd equation
5(3y + 8) + 2y = 6
Distribute and solve:
15y + 40 + 2y = 6

17y + 40 = 6
17y = -34
17 17
y = -2

substitute the value for y back in to find x.
y = -2
x = 3(-2) + 8
x= -6 + 8

x = 2

(2, -2) *State answer as an ordered pair (x,y)*

Check in BOTH ORIGINAL EQUATIONS!
x = 3y + 8
(2) = 3(-2) + 8
2 = -6 + 8
2 = 2 ✓
5x + 2y = 6
5(2) + 2(-2) = 6
10 – 6 = 4
4 = 4 ✓

Solve each system and check (in both equations):

a) $x = 2y + 1$
$5x - 6y = 13$

b) $y = 3x + 4$
$9x + 2y = -37$

c) $4x + 2y = 24$
$10x + y = 8$

d) $6x - 5y = 20$
$x + 3y = 11$

e) $7x + 9y = -74$
$4x + y = -5$

f) $8x + 3y = 35$
$10x - y = 1$

Q3 Quiz 7 Review

1) $y = 3x - 8$
$6x - 5y = 31$

2) $x = 2y + 9$
$5x + 8y = 117$

3) $y = 2x - 3$
$6x - 5y = 31$

4) $4x + y = -9$
$12x - 7y = 123$

5) $x - 7y = 19$
$6x + 11y = 61$

6) $3y - 2 = x$
$3x - 7y = -16$

Answer Key: ((1,-5) 2) (17,4) 3) -4,-11) 4) (1.5, -15) 5) (12,-1) 6) (-17,-5)

Solving Systems with Linear Combinations ("Elimination"):

Sometimes solving a system of equations using substitution can be very difficult. For these problems we solve using Linear Combinations (or Elimination). With elimination you solve by eliminating one of the variables. This is accomplished by adding the 2 equations together. Before you can add the equations together, you need one of the two variables to have two things:

1) Same Coefficient
2) Different Signs (one positive and one negative)

When you add terms with the same coefficient and different signs, the term drops out. You then solve for the variable that is left. After you have solved for one variable, you plug the value into one of the original equations and solve for the 2nd variable (just like Substitution). Then, you check the solution in both original equations. The only difference between Substitution and Elimination is how you solve for the 1st variable. After that they are the same.

Examples:
A) Sometimes it works out that the 2 equations already have a variable with the same coefficient and different signs. You can then just add the equations:

$3x + 4y = 10$ ***(The +4y and -4y cancel out***
$5x - 4y = -58$ ***leaving you with just 8x.)***
$\frac{8x}{8} = \frac{-48}{8}$

$x = -6$

Plug x = -6 in:
$3(-6) + 4y = 10$
$-18 + 4y = 10$
$+18 \quad +18$
$\frac{4y}{4} = \frac{28}{4}$
$y = 7$

3x+4y = 10
$3(-6) + 4(7) = 10$
$-18 + 28 = 10$
$10 = 10$(*check*)
5x – 4y = -58
$5(-6) - 4(7) = -58$
$-30 - 28 = -58$
$-58 = -58$(*check*)

Final Solution: (-6, 7) CHECK IN BOTH!!!!

B) Sometimes (usually) the equations do not have same coefficient and different signs, so we have a little bit of manipulating to do.

$3x + 8y = 25$ ***With this system, nothing will drop out if we just add the***
$5x + 4y = 23$ ***equations. So we will multiply the bottom one by (-2).***
$-2(5x + 4y = 23)$ ***Now the y's have the same coefficient with different signs.***
$-10x - 8y = -46$
$3x + 8y = 25$
$\frac{-10x - 8y = -46}{-7x = -21}$
$\frac{-7x}{-7} = \frac{-21}{-7}$

$x = 3$

Now plug x = 3 in:
$3(3) + 8y = 25$
$9 + 8y = 25$
$-9 \quad -9$
$\frac{8y}{8} = \frac{16}{8}$
$y = 2$

3x + 8y = 25
$3(3)+8(2) = 25$
$9 + 16 = 25$
$25 = 25$ (*check*)
5x + 4y = 23
$5(3) + 4(2) = 23$
$15 + 8 = 23$
$23 = 23$ (*check*)

Final Solution: (3,2) CHECK IN BOTH!!!!

C. Sometimes we need to manipulate both equations. We can do this by

"criss crossing the coefficients."

6x + 7y = 11
5x – 6y = -50

This is different than Example B, because no coeffcient goes into another evenly.

You need the negative sign to change the 6x to negative so the signs will be different.

-5(6x + 7y = 11)
6(5x – 6y = -50)

You can also use 5 and -6.

You can also "criss cross" the y coefficients.

-30x – 35y = -55
30x – 36y = -300
- 71y = -355
-71 -71

y = 5

Plug in y = 5
5x – 6(5) = -50
5x – 30 = -50
+30 +30
5x = -20
5 5

x = -4

6x + 7y = 11
6(-4) + 7(5) = 11
-24 + 35 = 11
11 = 11 (*check*)

5x – 6y = -50
5(-4) – 6(5) = -50
-20 – 30 = -50
-50 = -50 (*check*)

Final Solution: (-4, 5) CHECK IN BOTH!!!!

Practice:

1) 7x + 3y = 10
5x – 6y = 56

2) $11x + 5y = 27$
$4x + 6y = 60$

3) $9x + 7y = 126$
$7x - 9y = -32$

4) $12x - 5y = 63$
$8x + 3y = 23$

5) $5x + 9y = 14$
$6x + 11y = 18$

6) $10x - 9y = 36$
$4x + 3y = -12$

7) $5x + 6y = 42$
$3x + 14y = 20$

8) $7x - 5y = -42$
$8x + 3y = -48$

9) $4x - 3y = 19$
$8x + 5y = 159$

Mixed Substitution and Elimination:

Solve each system algebraically:

1) $5x - 2y = -9$
$7x + 2y = -27$

2) $-4x + 2y = -16$
$5x - 3y = 19$

3) $x = 2y - 6$
$5y - 3x = 11$

4) $5x - 6y = -74$
$7x + 5y = 17$

5) $4x - 5 = y$
$7x + 5y = 83$

6) $7x + 4y = -11$
$5x + 2y = -13$

7) $5x - 6y = -17$
$3x + 8y = -16$

8) $x = 6 + 2y$
$6x - 5y = 15$

9) $6x + 5y = 23$
$11x + 4y = 6$

10) $y = 3x + 4$
$8x - 9y = 59$

11) $12x - 7y = 46$
$4x + 3y = -6$

12) $9x - 4y = -88$
$2x + 5y = 4$

13) $24x - 6y = -66$
$12x - 3y = -33$

14) $5x - 6y = 42$
$15x - 18y = 54$

15) $7x + 6y = -12$
$5x + 2y = -20$

16) $13x - 3y = 78$
$4x + 6y = -66$

17) $2y - 5 = x$
$4x - 11y = -38$

18) $3x - 7y = -10$
$5x + 12y = -64$

19) $6x - 17y = -104$
$4x - 7y = -39$

20) $9x - 5y = -43$
$3x + 11y = 87$

21) $9x = 11y + 25$
$5x - 12y = 8$

22) $6y = 5x - 38$
$7x + 9y = 1$

23) $6x + 5y = 33$
$5x + 37 = 3y$

24) $y = 3x + 5$
$12x - 7y = 1$

Answer Key to Algebraic Systems:

1) (-3,-3)	7) (-4, -.5)	13) many sol.	19) (2.5, 7)
2) (5,2)	8) (0,-3)	14) no sol.	20) (-1/3, 8)
3) (8,7)	9) (-2,7)	15) (-6,5)	21) (4,1)
4) (-4,9)	10) (-5,-11)	16) (3,-13)	22) (4,-3)
5) (4,11)	11) (1.5, -4)	17) (7,6)	23) (-2,9)
6) (-5,6)	12)(-8, 4)	18) (-8, -2)	24) (-4,-7)

Extra Practice (do in NB)

1) $6x - 5y = -7$
$11x + 5y = 58$

2) $5x + 4y = -69$
$5x - 7y = 52$

3) $6x + 7y = -28$
$5x - 14y = -182$

4) $11x - 4y = 53$
$7x - 8y = 1$

5) $3x - 7y = 42$
$2x + 5y = 57$

6) $9x - 4y = 177$
$6x - 5y = 111$

7) $8x - 11y = 77$
$6x + 4y = -28$

8) $13x - 2y = 72$
$9x + 5y = -14$

9) $12x = 20 - 8y$
$5x - 6y = -57$

10) $5y = 8x + 97$
$10x + 7y = 51$

Answer Key:

1) (3, 5)

2) (-5, -11)

3) (-14, 8)

4) (7,6)

5) (21,3)

6) (21, 3)

7) (0, -7)

8) (4, -10)

9) (-3,7)

10) (-4, 13)

Q3 Quiz 8 Review

1) $7x - 4y = -86$
$9x - 4y = -98$

2) $3x - 10y = -18$
$9x + 8y = -168$

3) $5x + 8y = 70$
$-4x - 5y = -56$

4) $10x + 11y = 37$
$8x - 7y = -160$

5) $6x + 13y = -66$
$4x + 7y = -34$

6) $5x - 9y = 22$
$8x - 5y = 101$

Answer Key:
1) (-6,11) 2) (-16,-3) 3) (14,0) 4) (-9.5, 12) 5) (2,-6) 6) (17,7)

Word Problems Involving Systems

A Day With Boohbah!!

1) Boohbah went into Dunkin Donuts for breakfast. Boohbah bought 5 donuts and 2 muffins for $5.10. Boohbah went to order some more and the guy behind the counter made fun of him for eating so much. He smacked around the guy behind the counter and bought 2 donuts and 7 muffins for $8.55. Find the price of 1 donut and 1 muffin.

2) Boohbah was still angered by the guy behind the counter. So, he went and beat up some of his family members. This made Boohbah hungry again. At Cherry Valley deli, Boohbah went in and bought 7 TCS's and 3 sodas for $50.15. This didn't fill him up, so he went back in and bought 2 more TCS's and 2 more sodas for $16.10. What would the price of 4 TCS's and 3 sodas be?

3) Boohbah finished off the clown from Dunkin Donuts, hid the body, and was then ready for dessert, so he hit Maggie Moos!! He bought 2 cones and a sundae for $9.70. Again, Boohbah wanted more…. Much more…. So he bought 4 more cones and 5 more sundaes for $32.90. Find the price of each item.

4) Boohbah went home and found his jar of change. Boohbah hates pennies and nickels. So there are only dimes and quarters in his jar. If there are 400 coins in the jar and the total amount of money is $79.45, how many of each coin are in the jar?

Mixed Problems:

1) After a big Yankee win, Didi bought 4 slices of pizza and 2 cokes for $10.20 and Giancarlo bought 3 slices of pizza and 3 cokes for $9.90. Find the price of one coke. Find the price of 1 slice of pizza.

2) Brett went to the donut shop and bought 6 donuts and 4 large coffees for $8.92. Chase went in right after Brett and bought 5 doughnuts and 6 large coffees for $10.50. Find the price of 1 large coffee. Find the price of 1 donut. Gary went in and bought 3 donuts and 2 large coffees. How much did he pay?

3) Greg and CC went to the burger stand and bought dinner. Greg had 2 cheeseburgers and 3 fries. CC bought 3 cheeseburgers and 2 fries. Greg paid $16.55. CC paid $17.45. How much would 2 cheeseburgers and 1 fries cost?

4) Aaron and Masahiro went shopping for some new Yankee gear. Aaron bought 4 sweatshirts and 5 t-shirts for $254. Masahiro bought 2 sweatshirts and 4 t-shirts for $154. How much would 2 sweatshirts and 3 t-shirts cost?

5) Maggie and Erin went to see *Frozen* and went to the snack bar before finding their seats. Maggie paid $11.05 for 2 candy bars and 3 sodas. Erin paid $17.55 for 3 candy bars and 5 sodas. Find the total cost of 4 candy bars and 1 soda.

6) Sam and Peter went to the pizzeria and ordered some slices. Sam bought 2 slices of Sicilian and 2 regular and his bill was $10. Peter bought 3 slices of Sicilian and 1 regular for $10.50. How much would 4 Sicilian and 5 slices of regular cost?

7) Solid ties cost $21 and striped ties cost $24. The store sold 200 ties and made $4,413. How many of each were sold?

8) At a movie theater adult tickets cost $9.00 and child tickets cost $4.00. 120 people attended the last showing of *Silver Linings Playbook* and $720 was collected at the ticket booth. How many of each ticket was sold?

9) A jar of change was filled with only quarters and dimes. If there were 600 coins in the jar and there was $121.05 in the jar, how many of each coin were there?

10) A 35-minute phone call cost $4.95. Introductory minutes cost $.16/min and additional minutes are $.11/min. How many minutes were billed at each rate?

11) A 32-minute phone call cost $3.01. Introductory minutes cost $.17/min and additional minutes are $.08/min. How many minutes were billed at each rate?

12) There was a jar of coins filled only with nickels and quarters. If there is $53.00 in the jar and there is a total of 300 coins, how many of each coin are in the jar?

Answer Key

1) 1 coke cost $1.50, 1 slice cost $1.80.
2) 1 large coffee cost $1.15, 1 donut cost $.72. Gary paid $4.46
3) 2 Cheeseburgers and 1 Fries cost $9.45. (CB cost $2.95 and fries cost $3.85)
4) 2 sweatshirts and 3 t-shirts cost $136. (Sweatshirts cost $41 and t-shirts cost $18)
5) 4 candy bars and 1 soda costs $12.35 (candy bars are $2.60 and sodas are $1.95)
6) 4 Sicilian and5 regular slices would cost $22.25 (Sicilian slice cost $2.75 and the regular slice cost $2.25)

7) 129 solid and 71 striped.
8) 48 adults and 72 child tickets
9) 407 quarters and 193 dimes
10) 22 introductory minutes and 13 additional minutes
11) 5 introductory minutes and 27 additional minutes
12) 190 quarters and 110 nickels