

A letter to Mr. Williams math students and their family

During these troubling times I want you to know that I care about these kids and my heart goes out to everyone who is being negatively impacted by what is going on. It is going to be a tough time moving forward. Given this unprecedented scenario, I do not want to create any more stress than necessary. I also care about the student's retention of what we have learned and will continue to learn. So I have a two pronged approach going forward.

1. I want the students to do a review of what I consider to be the most important things we have learned so far. I will assign these lessons on Moby Max. I would like the students to do 1 or 2 lessons a day (nothing more than 2!)
2. I want students to stay engaged with math in general. I will email out some math videos I want kids to watch and take notes on. These videos will be off topic but engaging and interesting. I will also send out interesting articles and problems for kids to solve.

For those unable to access internet I have put together a package you can pick up.

Although this time away will not impact your grades negatively, this time is a good opportunity to improve your grades.

How to get to Moby Max

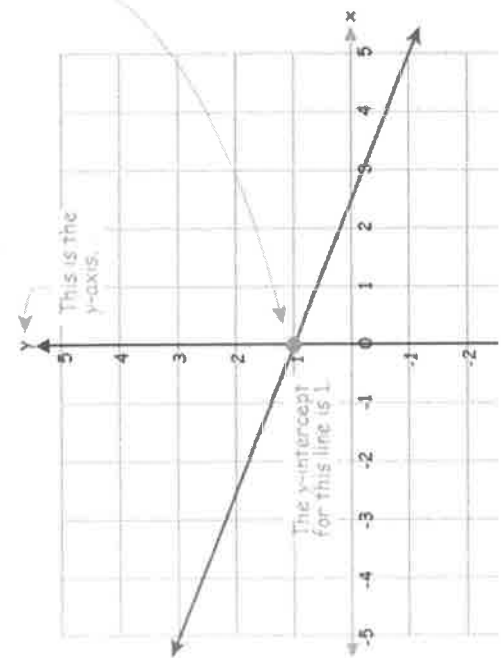
- Go to: Spokane Public Schools website
- Digital Tools
- Clever
- MobyMax
- Take the "Quick Placement Test"
- Then do the lessons that it provides.

Please don't hesitate to contact me via email for any questions. I will do my best to respond in a timely manner. Jaredw@spokaneschools.org

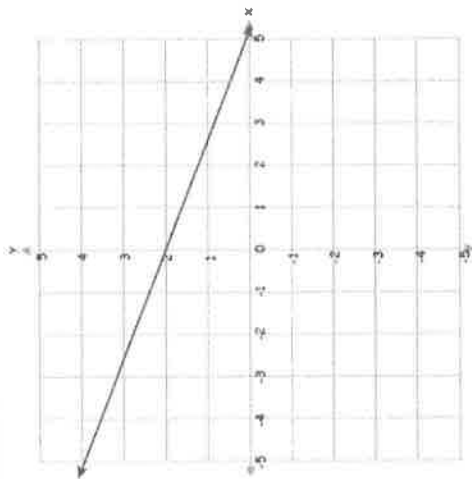
Take care, wash your hands, we will get through this.

Jared Williams

The point where the line crosses the y-axis is called the y-intercept.

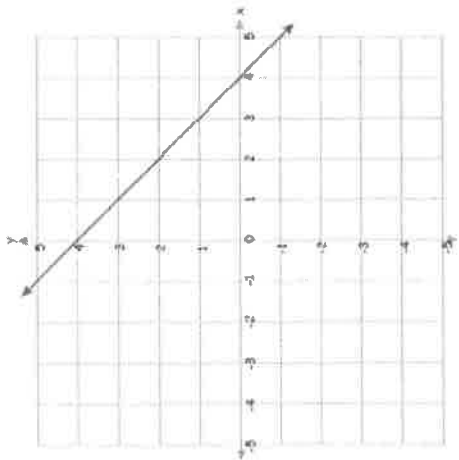


Question 1:



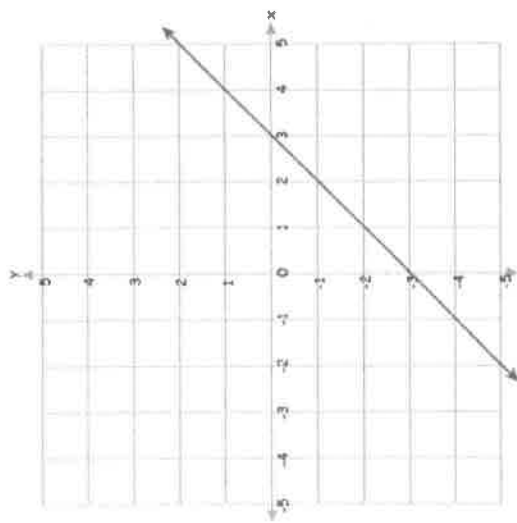
The line shown above has a y-intercept of

Question 2:



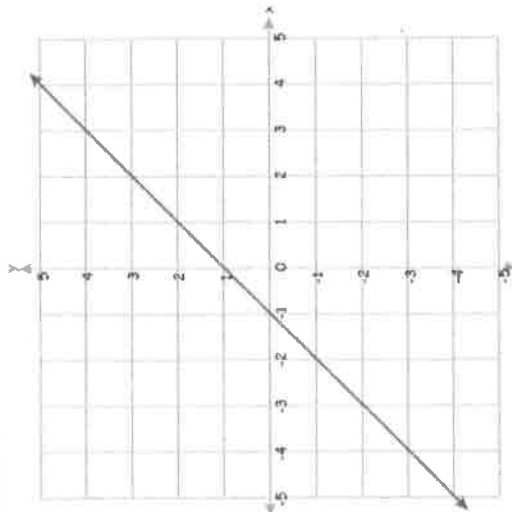
The line shown above has a y-intercept of

Question 3:



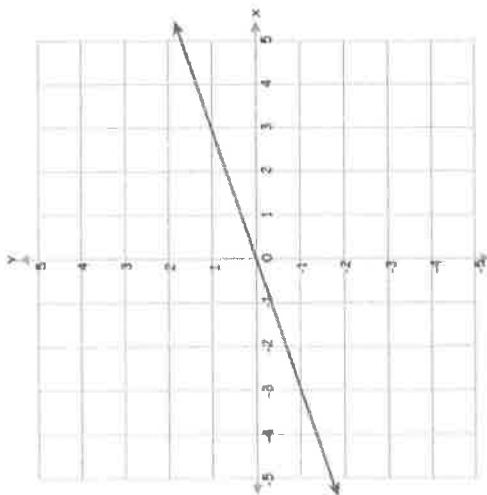
The line shown above has a y-intercept of

Question 4:

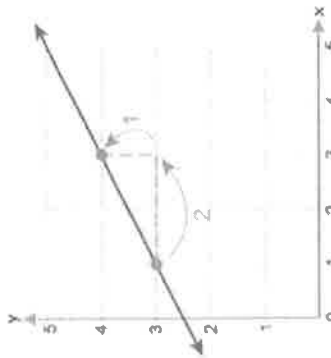


The line shown above has a y-intercept of

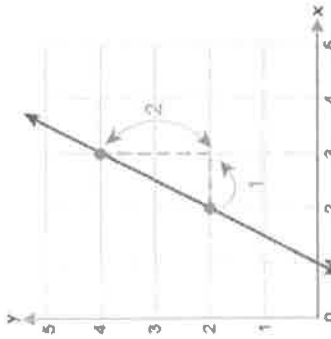
Question 5:



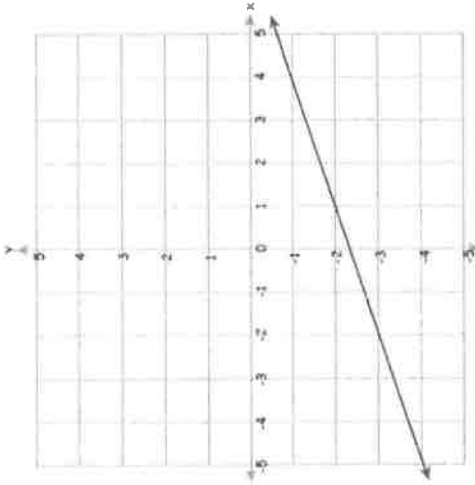
The line shown above has a y-intercept of



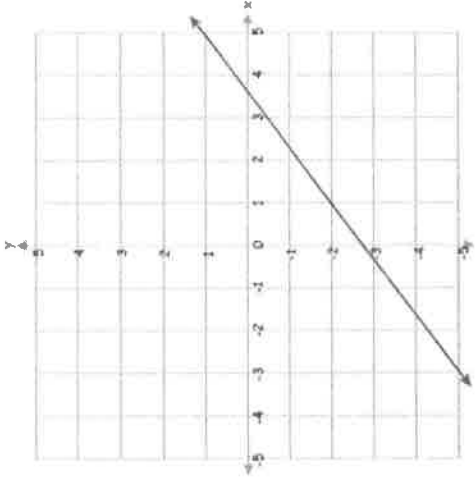
$$\text{slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{1}{2}$$



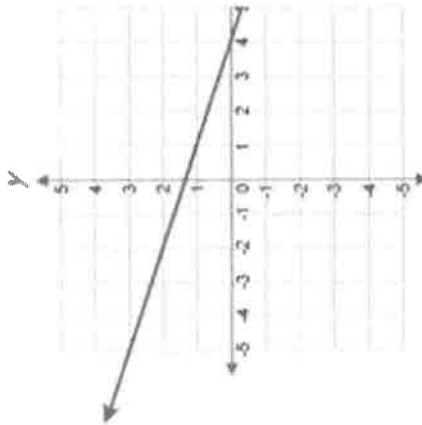
$$\text{slope} = \frac{\text{change in } y}{\text{change in } x} = \frac{2}{1} = 2$$



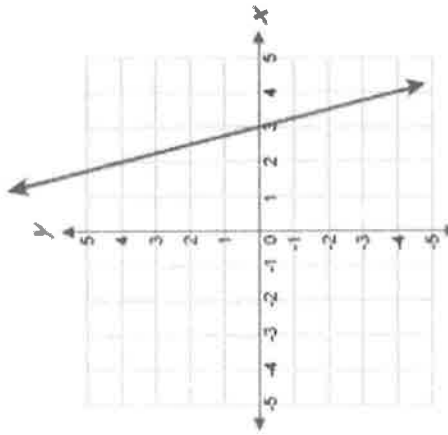
What is the slope of the line shown above?



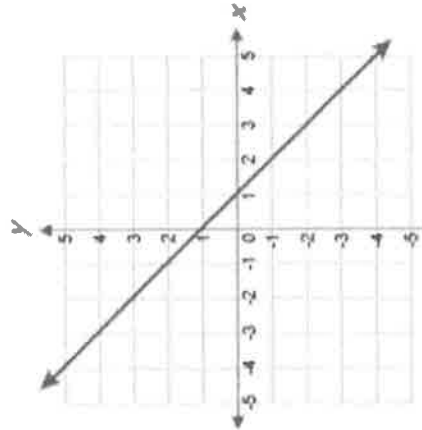
What is the slope of the line shown above?



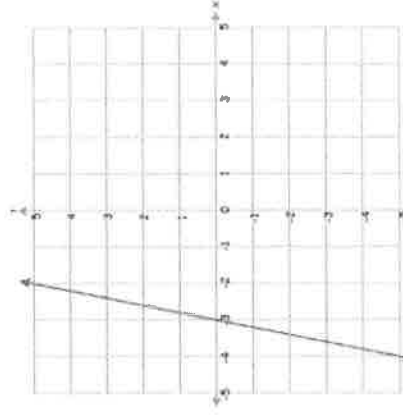
What is the slope of the line?



What is the slope of the line?

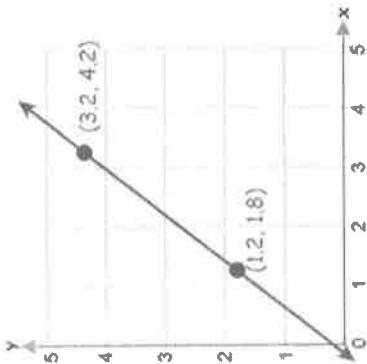


What is the slope of the line?



What is the slope of the line shown above?

Calculate slope by plugging any two points into the slope formula.



$$\text{slope} = \frac{y_2 - y_1}{x_2 - x_1}$$

$$\text{slope} = \frac{4.2 - 1.8}{3.2 - 1.2} = \frac{2.4}{2.0} = 1.2$$

Find the slope between two points on a graph that are located at (4.4, 2.8) and (6.3, 5).

- A 0.66
- B 1.66
- C 1.56
- D 0.56

Find the slope between two points on a graph that are located at (3, 5) and (5, 6).

- A 0.7
- B 0.5
- C -0.5
- D 0.6

Find the slope between two points on a graph that are located at (5.8, 10) and (9.3, 2.7).

Find the slope between two points on a graph that are located at (1, 3.2) and (3, 5.9).

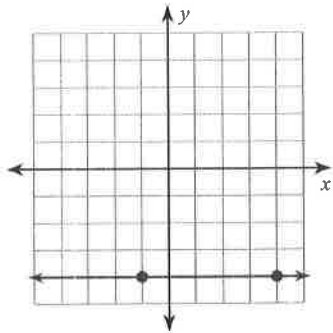
- A -2.35
- B -1.35
- C 1.35
- D 2.35

Find the slope between two points on a graph that are located at (7.4, 7.1) and (5.9, 9.9).

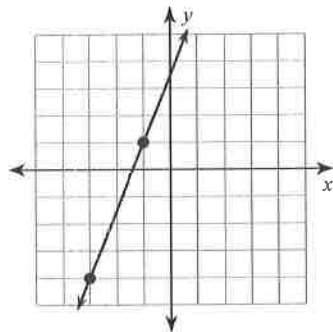
Assignment

Find the slope of each line.

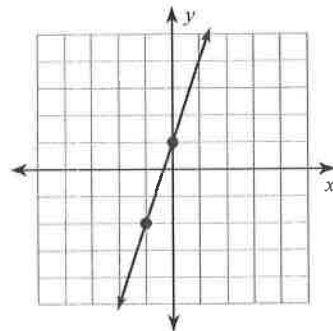
1)



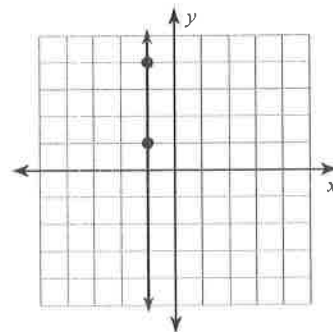
3)



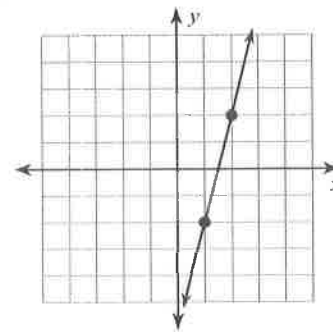
5)



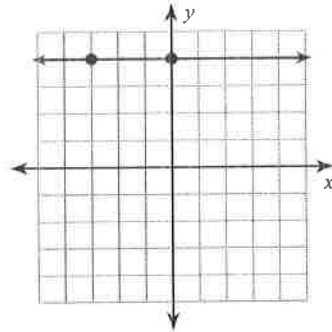
7)



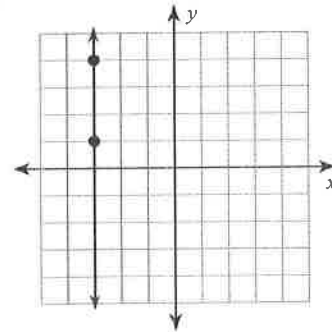
9)



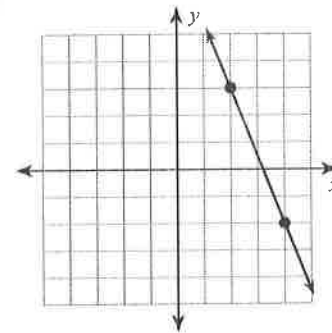
2)



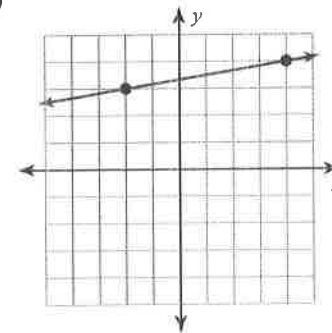
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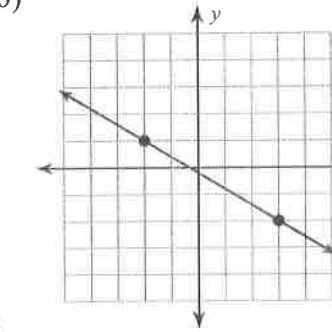
6)



8)



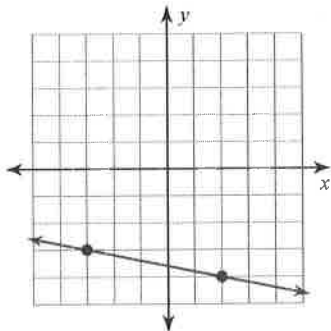
10)



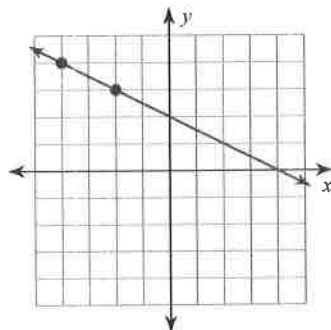
Assignment

Find the slope of each line.

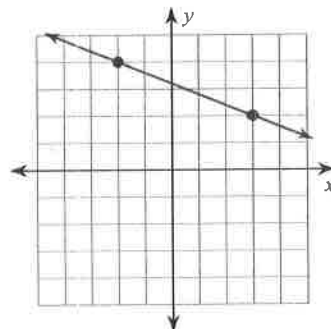
1)



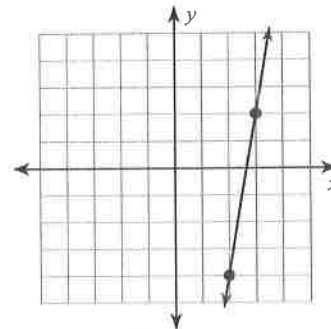
3)



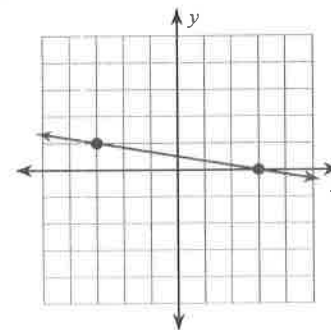
5)



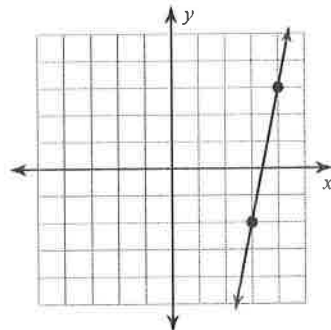
7)



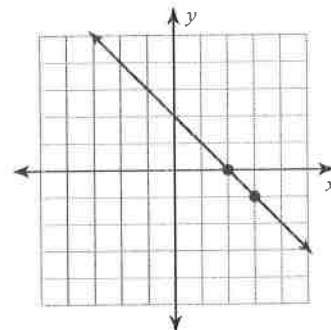
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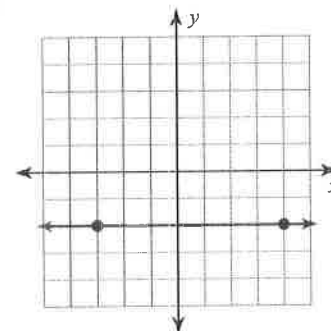
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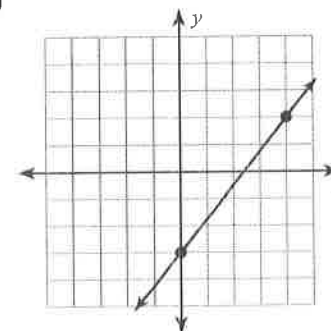
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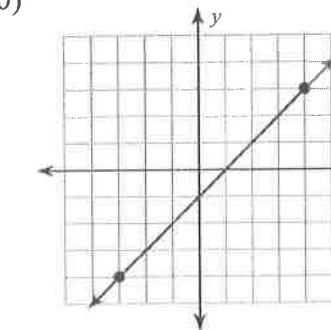
6)



8)

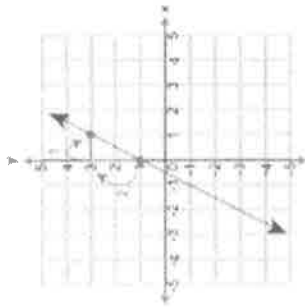
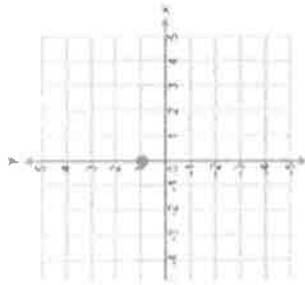


10)

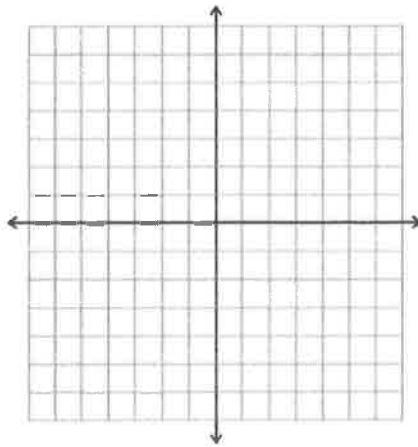


To graph a linear equation...

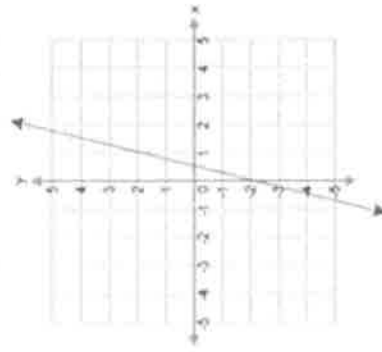
- Plot the y -intercept.
- Use the slope to plot a second point.



Graph $y = \frac{3}{2}x - 3$ using the slope and y -intercept.

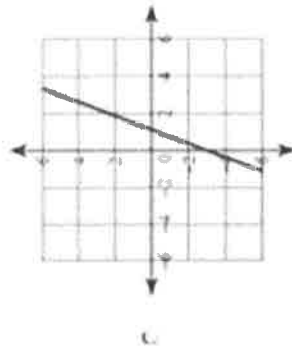


Which equation matches the graph shown?

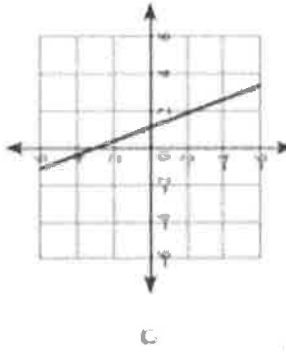


- $y = 4x - 2$
- $y = -3x + 4$
- $y = -3x + 2$
- $y = 4x + 2$

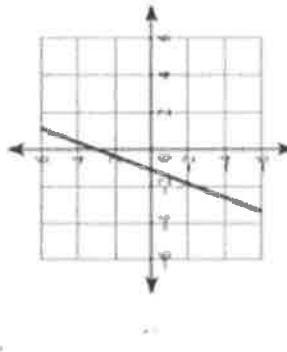
Graph $y = \frac{2}{3}x + 3$ using the slope and y -intercept. Graph $y = -\frac{1}{2}x + 5$ using the slope and y -intercept.



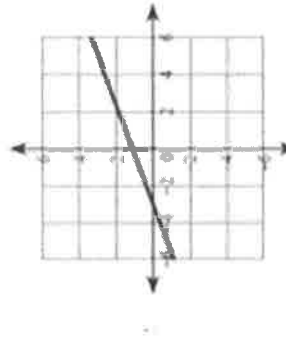
A



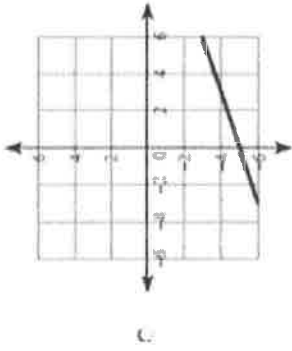
B



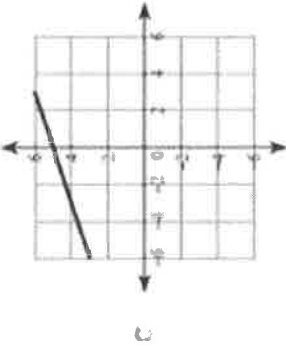
C



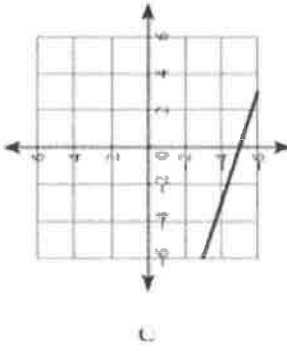
D



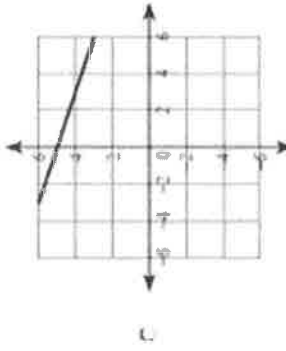
E



F

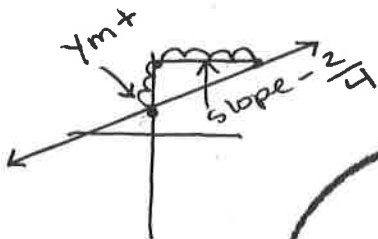


G



H

Definition - start at the (y) intercept the from that point, where the slope says,



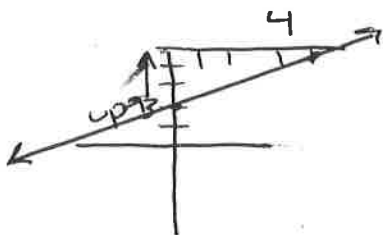
you need 2 Facts/Characteristics things:

(slope) and (intercept):
 $y = \frac{1}{2}x + 4$
 or
 $y = 4 + \frac{1}{2}x$
 (Intercept)

How to graph a linear equation

~~Examples~~ Positive:

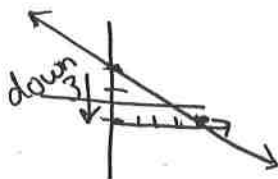
example: $y = \frac{3}{4}x + 2$



~~Negative~~ Non-examples

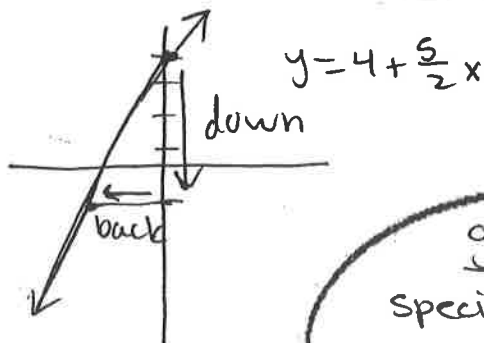
example:

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

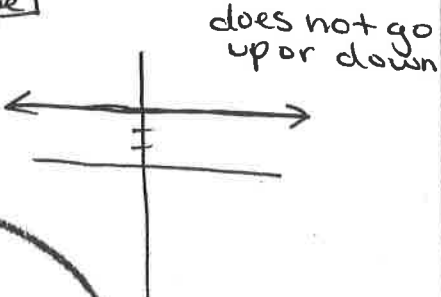


*All whole numbers are fractions - so, $(4 = \frac{4}{1})$ $(-3 = -\frac{3}{1})$
 * $x = 1x$ $-x = -1x$ * $4x =$ go up 4 over 1 $-3x =$ go down 3 over 1 $x =$ go up 1 over 1 $-x =$ go down 1 over 1

~~Definition~~ Run out of room:

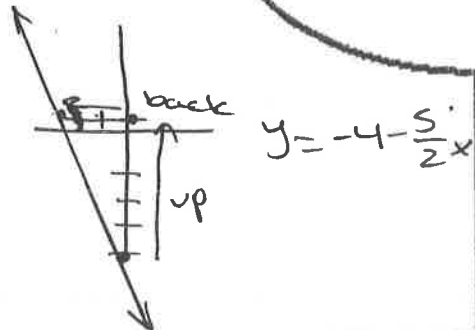


$y = 3$
 No slope

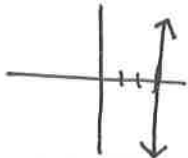


graphing special cases

Examples



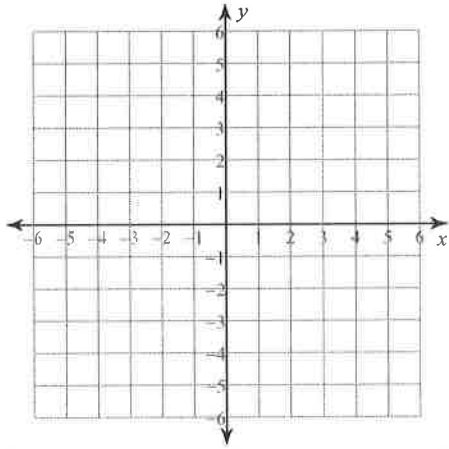
$x = 3$ ~~Non-examples~~
 no intercept - undefined slope goes up and down at the same time.



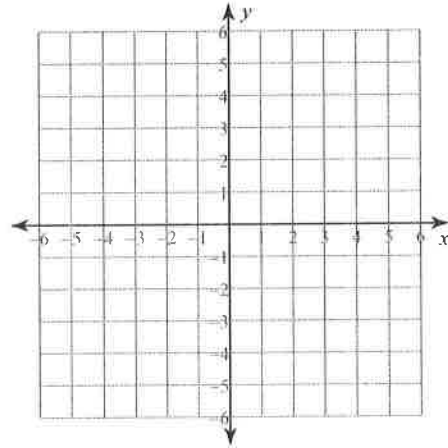
Assignment

Sketch the graph of each line.

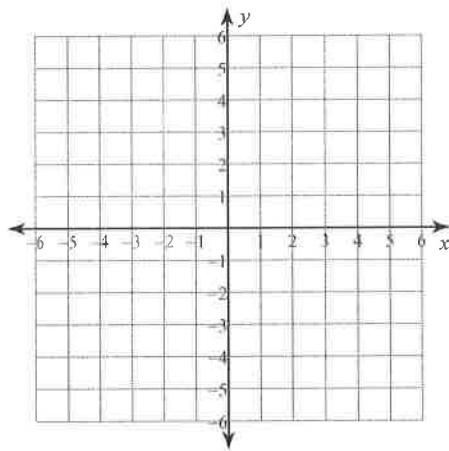
1) x -intercept = -5 , y -intercept = 4



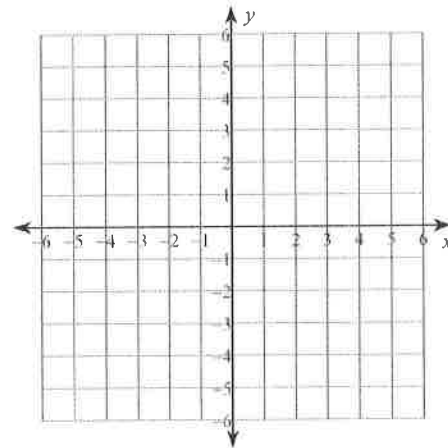
2) x -intercept = 5 , y -intercept = -2



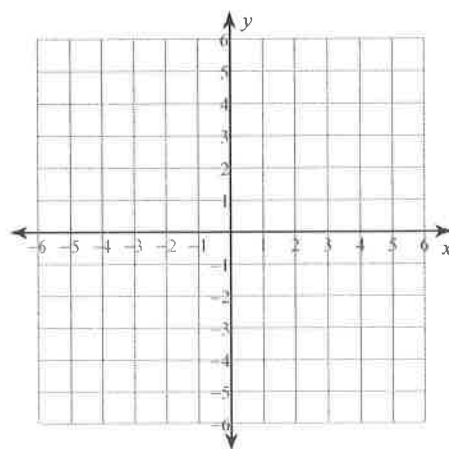
3) x -intercept = -1 , y -intercept = 2



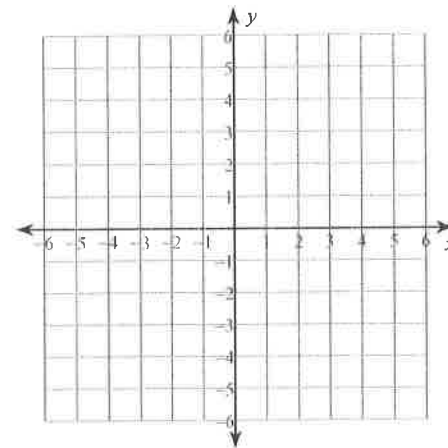
4) $y = -\frac{5}{2}x + 5$



5) $y = -\frac{7}{4}x + 3$



6) $y = 3x$

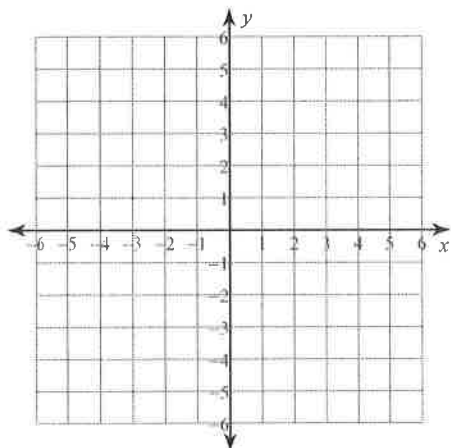


Assignment

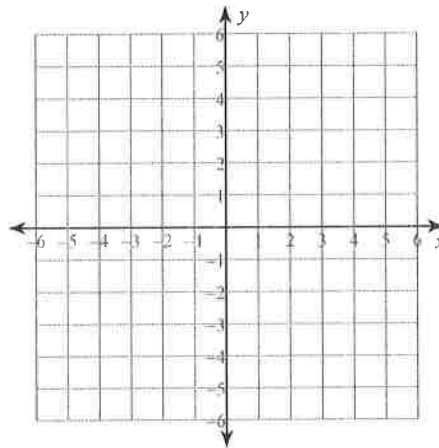
Date _____ Period _____

Sketch the graph of each line.

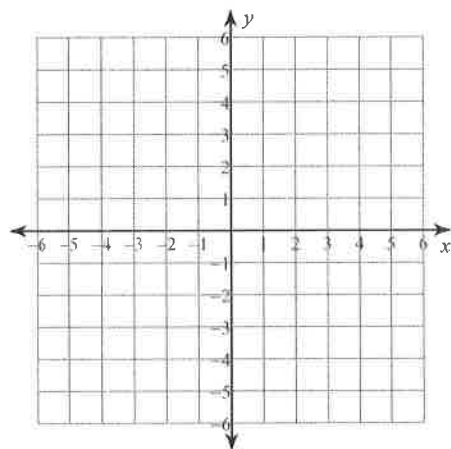
1) x -intercept = 2, y -intercept = -5



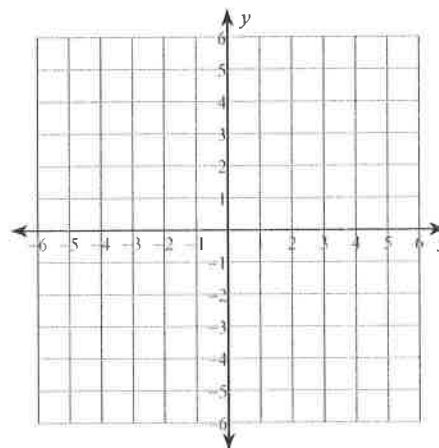
2) x -intercept = 4, y -intercept = 1



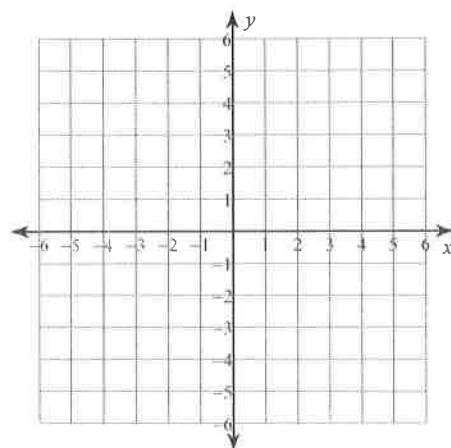
3) x -intercept = 3, y -intercept = -2



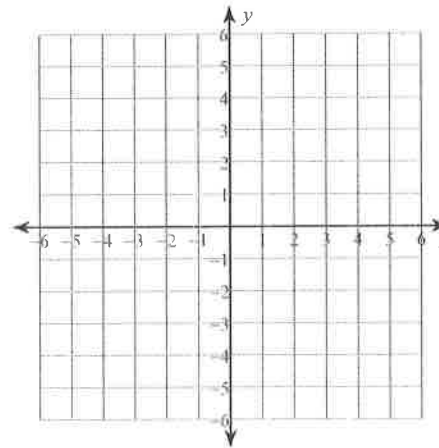
4) $y = -\frac{6}{5}x - 2$



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



6) $y = 4x - 2$



To write the equation of a line in slope intercept form, substitute the slope for m and the y -intercept for b .

$$y = mx + b$$

slope y -intercept

This equation, in slope-intercept form, has a slope of -2 and a y -intercept of -5 .

$$y = mx + b$$

$$y = -2x - 5$$

Question 1:

Find the slope and y -intercept of the following equation:

$$y = 3x - 1$$

The slope of the equation is

The y -intercept of the equation is

Question 2:

Find the slope and y -intercept of the following equation:

$$y = -2x + 6$$

The slope of the equation is

The y -intercept of the equation is

Question 3:

Find the slope and y -intercept of the following equation:

$$y = x - 3$$

The slope of the equation is

The y -intercept of the equation is

Find the slope and y -intercept of the following equation:

$$y = \left(\frac{1}{2}\right)x - 7$$

Find the slope and y -intercept of the following equation:

$$y = -\left(\frac{1}{3}\right)x + 8$$

Question 1:

Write an equation in slope-intercept form of a line with slope 3 and y -intercept $\frac{2}{3}$.

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

$y = \frac{2}{3}$

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

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

None of the above

Question 2:

Write an equation in slope-intercept form of a line with slope 1.99 and y -intercept 5.

$y = -1.99x$

$y = 1.99$

$y = 1.99 - x$

$y = 1.99 + x$

None of the above

Write an equation in slope-intercept form of a line with slope $8\frac{1}{5}$ and

y -intercept 2.

Write an equation in slope-intercept form of a line with slope $\frac{1}{4}$ and

y -intercept -2 .

Concept: Equations

Topic	Information/Picture
1 step equations	<p>• 4 kinds (addition, subtraction, multiplication, division)</p> <p><u>add</u> $5 + x = 7$ (subtract the term from -5 both sides.) $x = 2$</p> <p><u>subtract</u> $x - 5 = 10$ $+5 + 5$ $x = 15$ (add to both sides)</p> <p><u>multiply</u> $\frac{5x}{5} = \frac{20}{5}$ $x = 4$ (divide the # by both sides)</p> <p><u>divide</u> $\frac{x}{5} = 10$ $x = 50$ (multiply the denominator by both sides)</p>
2 step equations	<p>$2x + 7 = 27$ $-7 = -7$ $\frac{2x}{2} = \frac{20}{2}$ $x = 10$ (subtract the extra term from both sides)</p> <p>$2x - 7 = 14$ $+7 +7$ $\frac{2x}{2} = \frac{21}{2}$ $x = \text{fraction}$ (add the term to both sides)</p> <p>$\frac{2x + 6}{2} = 10$ $2x + 6 = 20$ $-6 -6$ $2x = 14$ $\frac{2x}{2} = \frac{14}{2}$ $x = 7$ (multiply by the denominator)</p>

Concept: Multi-Step (distributing)

Topic	Information/Picture
variables on both sides	<p>$2x - 7 = x + 15$ $-x -x$ $x - 7 = 15$ (subtract the numbers to subtract get it on the other side) the smallest variable on both sides REWRITE! $x - 7 = 15$ $+7 +7$ $x = 22$</p> <p>• we can add and subtract variables to each other BUT not to numbers without variables. • $a + a = 2a$ but $a + 1$ can not be added</p>
combining like terms	<p>• we can add and subtract variables to each other BUT not to numbers without variables. • $a + a = 2a$ but $a + 1$ can not be added</p>
distributing getting rid of parenthesis	<p>$10(x - 4) + 4 + 5x = 3x - 4 + 10x$ $10x - 40 + 4 + 5x = 3x - 4 + 10x$ $15x - 36 = 13x - 4$ $-13x -13x$ $2x - 36 = -4$ $+36 +36$ $2x = 32$ $\frac{2x}{2} = \frac{32}{2}$ $x = 16$</p> <p>• parenthesis, combine like terms, variables on both sides (1 step) • go in descending order • parenthesis</p>

Golden Rule of Algebra=What ever you do to one side, do to the other side, How to solve for each letter

$$\begin{array}{r}
 X - 5 = 8 \\
 + 5 = 13 \\
 X = 13
 \end{array}$$

$$\begin{array}{r}
 9 + X = 11 \\
 - 9 = 2 \\
 X = 2
 \end{array}$$

$$\begin{array}{r}
 4X = 20 \\
 / 4 = 5 \\
 X = 5
 \end{array}$$

$$\begin{array}{r}
 7 \cdot \frac{1}{7} X = 2 \cdot 7 \\
 X = 14
 \end{array}$$

If something is being taken away from X and whatever it is that is being taken

If something is being added to X, subtract whatever it is that is being added

If something is being divided by X, times a fraction is a division problem, multiply the fraction by a number that will make it equal 1

Solving two step equations!

Step 1: Get rid of the term that is not directly connected to x by subtracting or adding the term from both sides

$$\begin{array}{r}
 1) \quad 3x + 8 = 20 \\
 \quad \quad - 8 \quad - 8 \\
 \hline
 \end{array}$$

Step 2: re-write the equation

$$\begin{array}{r}
 3x = 12 \\
 / 3 \quad / 3 \\
 x = 4
 \end{array}$$

Step 3: Isolate the variable by either multiplying or dividing the number connected to the variable on both sides

Solving multi step equations!

Step 1: Get rid of a term on one side that is not directly connected to x by subtracting or adding the term from both sides

$$\begin{array}{r}
 3x + 8 = 20 + 5x \\
 - 5x \quad - 8 \quad - 8 \\
 \hline
 \end{array}$$

Step 2: Get rid of a term on the other side that is directly connected to x by subtracting or adding the term from both sides

$$\begin{array}{r}
 -2x = 12 \\
 / -2 \quad / -2 \\
 x = -6
 \end{array}$$

Step 3: re-write the equation

Step 4: Isolate the variable by either multiplying or dividing the number connected to the variable on both sides

Solving multi step equations!

$$\begin{array}{r}
 -5x + -6 + 4x = -2 + 9x + 4 \\
 -x - 6 = 9x + 2 \\
 +x \quad -2 \\
 \hline
 \end{array}$$

Step 0: combine things that are alike

Step 1: Get rid of a term on one side that is not directly connected to x by subtracting or adding the term from both sides

Step 2: Get rid of a term on the other side that is directly connected to x by subtracting or adding the term from both sides

Step 3: re-write the equation

$$\begin{array}{r}
 -8 = 10x \\
 / 10 \quad / 10 \\
 x = -2
 \end{array}$$

Step 4: Isolate the variable by either multiplying or dividing the number connected to the variable on both sides

multi step variable on both sides

Name _____ ID: 10

Assignment 4.5

Date _____ Period _____

Solve each equation.

1) $-n + 2n = -1 + 2n$

2) $-7 + 5k = 3k + 1$

3) $1 - 3x = 6 - 4x$

4) $-2 + 2x = 3x + 4$

5) $6 - 5p = -2p + 3p$

6) $5p + 4p + 9 = 1 + p$

7) $-12 + 3p = p - 2$

8) $2v - 2v = -1 - v$

9) $2k + 3 = 3k + 5$

10) $-b - 10 = -2b - 3 - 3$

multi step variable on both sides

Name _____ ID: 11

Assignment 4.5

Date _____ Period _____

Solve each equation.

1) $2 - 2x = 4x - 4x - 8$

2) $4k - 4 - 3 + 12 = 1 + 6k$

3) $6n + 3n = -12 + 6n$

4) $-7 + 5n = 6n - 1$

5) $2r + 3 = 7 + r$

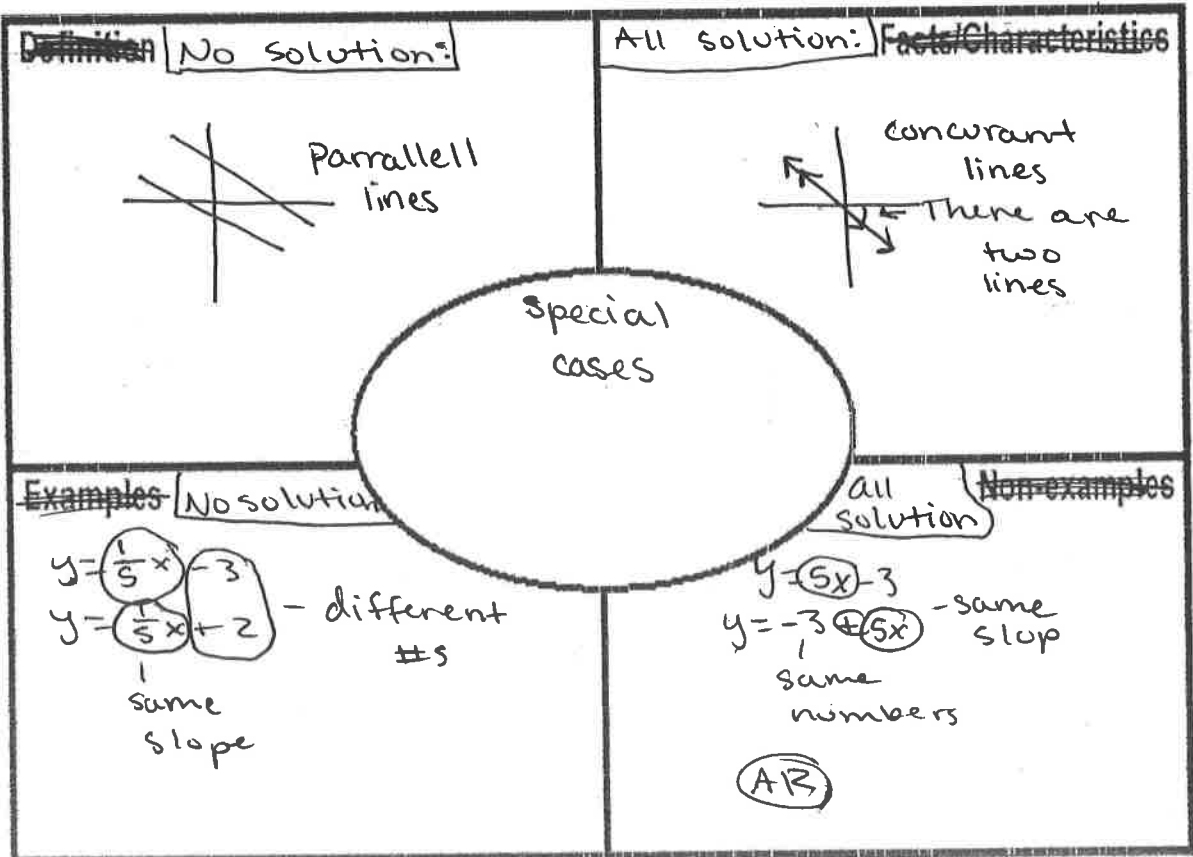
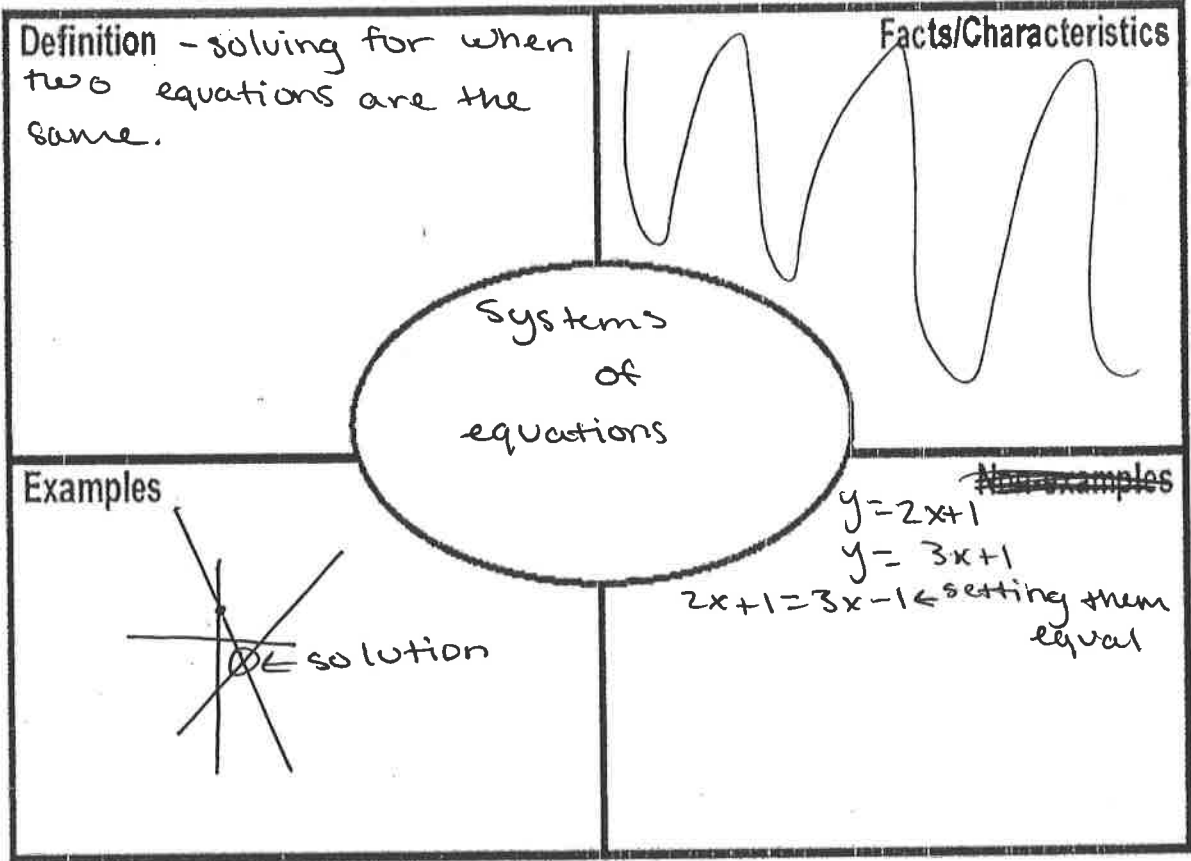
6) $6r + 2 = -4 + 5r$

7) $-x + 6x - 6 = 2 + x$

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

9) $-4 - x = -2x - 6$

10) $-5x + 3x = -3x - 3$

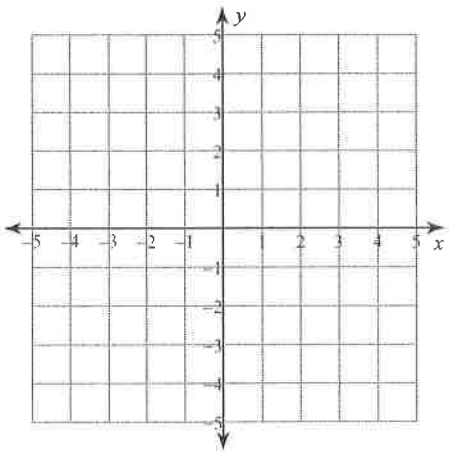


Assignment 5

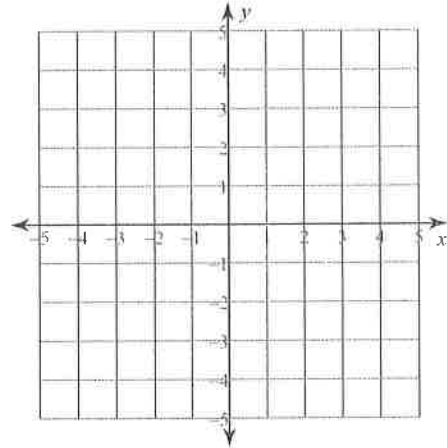
Solve each system by graphing.

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

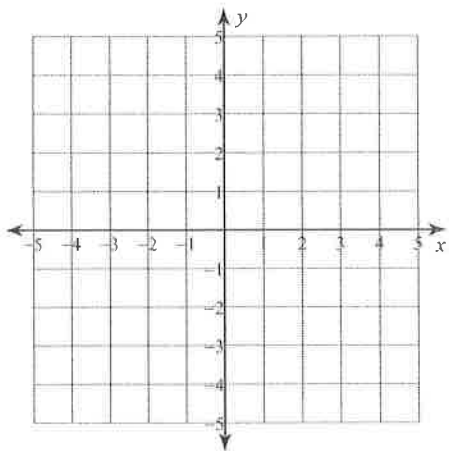
$y = -\frac{5}{4}x + 1$



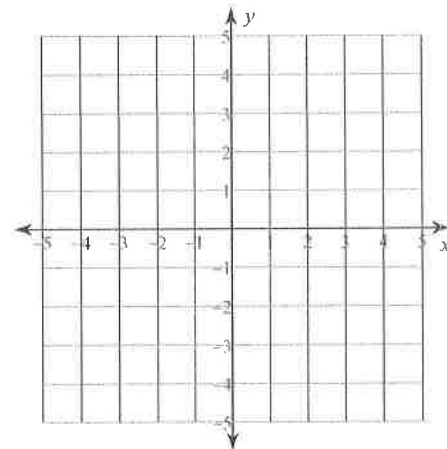
2) $y = 2x - 4$
 $y = -x - 1$



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



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



Assignment 6

Say if each system will have 1 solution, no solution, or allreal number solutions.

$$1) \begin{cases} y = -2x + 2 \\ y = -2x + 2 \end{cases}$$

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

$$3) \begin{cases} y = \frac{1}{3}x + 3 \\ y = \frac{1}{3}x + 4 \end{cases}$$

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

$$5) \begin{cases} y = -\frac{5}{3}x + 3 \\ y = -\frac{5}{3}x - 1 \end{cases}$$

$$6) \begin{cases} y = 6x + 3 \\ y = 6x + 3 \end{cases}$$

$$7) \begin{cases} y = -4 + 4x \\ y = 4x - 4 \end{cases}$$

$$8) \begin{cases} y = -7x - 3 \\ y = -7x + 1 \end{cases}$$

$$9) \begin{cases} y = -x - 4 \\ y = \frac{4}{3}x + 3 \end{cases}$$

$$10) \begin{cases} y = -x - 1 \\ y = \frac{1}{2}x - 4 \end{cases}$$

$$11) \begin{cases} y = \frac{1}{2}x + 4 \\ y = \frac{1}{2}x - 4 \end{cases}$$

$$12) \begin{cases} y = -6x + 2 \\ y = -6x - 1 \end{cases}$$

$$13) \begin{cases} y = -\frac{5}{4}x - 4 \\ y = \frac{1}{4}x + 2 \end{cases}$$

$$14) \begin{cases} y = -\frac{2}{3}x - 2 \\ y = -2 - \frac{2}{3}x \end{cases}$$

$$15) \begin{cases} y = 2x - 2 \\ y = 2x - 3 \end{cases}$$

$$16) \begin{cases} y = -\frac{1}{2}x - 2 \\ y = -\frac{1}{2}x + 3 \end{cases}$$

$$17) \begin{cases} y = -3x + 4 \\ y = -3x + 4 \end{cases}$$

$$18) \begin{cases} y = -2x - 1 \\ y = 1 \end{cases}$$

$$19) \begin{cases} y = -2x - 1 \\ y = -\frac{1}{2}x + 2 \end{cases}$$

$$20) \begin{cases} y = 2x - 2 \\ y = -2 + 2x \end{cases}$$