

Levy

**Instructions:** Put your name at the top of the page in the blank provided. Show all of your work clearly. You may use the back of the page to show extra work, as long as you label it clearly. Show all work at all times. Word problems need to show setup, equations using algebra and be solved using algebra (don't forget units). You may not use a calculator. Good luck!

1. For the equation:  $-3 + 3y = 4x$

a) Put the equation in slope-intercept form. Remember that is solving for one of the variables.

$$\frac{3y}{3} = \frac{4x}{3} + \frac{3}{3}$$

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

Take 1 pt off for mixed # slope

b) Give the y-intercept as an ordered pair.

$(0, 1)$  Correct  $\frac{1}{2}$   
 Ordered  $\frac{1}{2}$

c) Give the x-intercept as an ordered pair. Show the work in getting the x-intercept.

$(-\frac{3}{4}, 0)$  Correct  $\frac{1}{2}$   
 Ordered Pair  $\frac{1}{2}$

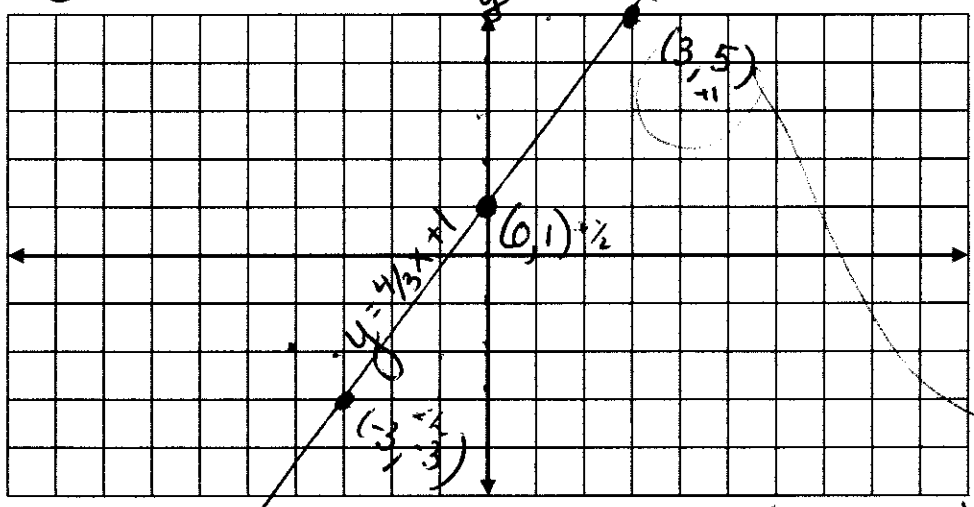
Let  $y=0$   
 $-3 = 4x$   
 $x = -\frac{3}{4}$

Work  $\frac{1}{2}$

d) State the slope.  $m = \frac{4}{3}$   $\frac{1}{2}$   
 Indicate how you arrived at this answer here.

See a)  $\frac{1}{2}$

e) Graph the line on the coordinate system below. Don't forget to label your 3 points, put arrows on the line and label the line.



Slope  $\frac{1}{2}$  (agrees)  
 Arrows  $\frac{1}{2}$   
 Label  $\frac{1}{2}$

Take off 1 pt if not 3 pts

2. Give the equation of any horizontal line.  $y = \#$   
 Give an ordered pair on the horizontal line you just gave.  $(x, \#)$   
 Give the slope of your horizontal line. zero

+12  $\frac{1}{2}$

+9  $\frac{1}{2}$

+3

3. Give the equation of the line passing through the points (4, -1) and (-2, 9). Be sure to show your work for finding the slope, and then plugging into the point-slope form, before you give the final equation in slope-intercept form.

*Take note of the next step*

$$m = \frac{9 - (-1)}{-2 - 4} = \frac{10}{-6} = -\frac{5}{3}$$

$$y - (-1) = -\frac{5}{3}(x - 4)$$

$$y + 1 = -\frac{5}{3}x + \frac{20}{3}$$

$$y = -\frac{5}{3}x + \frac{17}{3}$$

4. Lines which are perpendicular have neg. recip slope(s).  
(Fill in the blank with the most appropriate of the following)

a) different      b) negative reciprocal      c) the same

5. Write the equations of any two lines which are parallel to one another. Write them in slope-intercept form. A line is not considered parallel to itself.

$$y = m_1x + b_1$$

$$y = m_2x + b_2$$

*different*  
*same*

6. Solve the linear inequalities in 1 variable and graph them on a number line. Give each solution set in interval notation.

a)  $3(x + 2) - 6 > 14 - 2(x - 3)$

$$3x + 6 - 6 > 14 - 2x + 6$$

$$3x > 20 - 2x$$

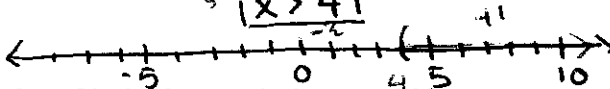
$$+2x \quad +2x$$

$$5x > 20$$

$$x > 4$$

*solving*

$(4, \infty)$



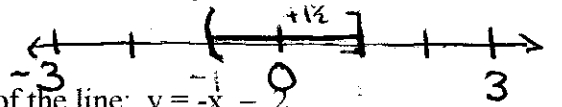
b)  $1 \leq -4x + 5 < 9$

$$-5 \leq -4x < 4$$

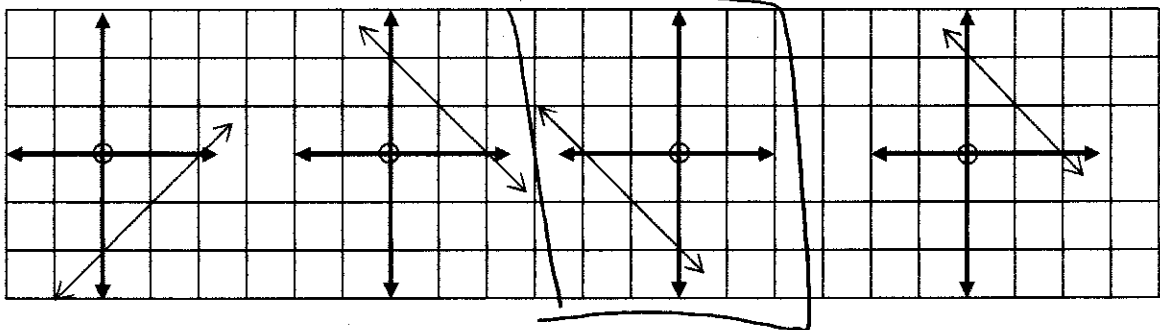
$$-4 \leq -x < 1$$

$$1 \leq x < -1$$

$(-1, 1]$



7. Circle the graph that would best represent the graph of the line:  $y = -x - 2$



neg slope  
neg int

8. Give the equation of a line with undefined slope?  $x = \#$

9. Solve the following proportion. Use algebra.

$$\frac{\frac{1}{2}(x + 9)}{\frac{1}{5}} = \frac{2x}{3}$$

$$\frac{1}{5} \cdot 2x = 3 \cdot \frac{1}{2}(x + 9)$$

$$\frac{2}{5}x = \frac{3}{2}(x + 9)$$

$$\frac{2}{5}x = \frac{3}{2}x + \frac{27}{2}$$

$$4x = 15x + 135$$

$$-15x \quad -15x$$

$$-11x = 135$$

$$-11x \quad -11$$

$$x = -12 \frac{3}{11}$$

Point out based on what was a success!

10. Maria participated in a biathlon. Her average running speed was 7 mph and her average biking speed was 18 mph. If the total race length was 28 miles, and her biking time exceeded her running time by 10 minutes. What were her running and biking times? You must show setup, an equation that can be used to solve the problem and then solve the problem.

+5

Run 1hr  
Bike 1hr.10min.

	D	R	T
run	7x	7mph	x
bike	18(x+1/6)	18mph	x+1/6

$$D_R + D_B = 28 \text{ mi.}$$

$$7x + 18(x + \frac{1}{6}) = 28$$

$$7x + 18x + 3 = 28$$

$$25x + 3 = 28$$

$$25x = 25$$

$$x = 1$$

11. If the width of my family room is decreased by one and then doubled, it is the same as the length. If the perimeter of my family room is 62 feet, find the length and the width. This must use algebra, show setup, an equation and give units to receive full credit.

+2

length =  $2(x-1)$

$P = 2l + 2w = 62$  width = x  
ft.

Width = 11 ft.  
length = 20 ft.

$$2(2(x-1)) + 2x = 62$$

$$4x - 4 + 2x = 62$$

$$6x - 4 = 62$$

$$6x = 66$$

$$x = 11$$

12. Choose **one** of the following problems to work. Show setup, and equation that can be used to solve it but **do not solve**.

- a) Kevin invested part of his \$10,000 bonus in a CD that paid 6% annual simple interest, and the remainder in a mutual fund that paid 11% annual simple interest. If his total interest for that year was \$900, how much did Kevin invest in each fund?
- b) How much of 50% acid should be mixed with 4.5 gallons of a pure acid solution in order to get an 80% acid solution? (Pure acid is 100% solution.)
- c) The Campus Coffee House wishes to make a Cajun Craziness coffee mixture from 2 of their most popular coffees, Creole Cahoots and Bayou Shenanigans. The Creole Cahoots sells for \$7 a pound and they wish figure out how much of it to add to 14 pounds of the Bayou Shenanigans which sells for \$4 a pound to make the Cajun Craziness mixture that will sell for \$5 a pound.

+4

a)

	P	R	T	I
CD	x	6%	1	0.06x
MF	10000-x	11%	1	0.11(10000-x)
	10000			900

b)

	V	%	Pure Acid
weak	x	50%	0.5x
strong	4.5	100%	1(4.5)
mix	x+4.5	80%	0.8(x+4.5)

c)

	V	\$/lbs	Total \$
Creole	x	\$7	7x
Bayou	14lbs	\$4	4(14)=56
Cajun	x+14	\$5	5(x+14)

Y. Butterworth

$$0.06x + 0.11(10000-x) = 900$$

Math 205 Fall08

$$0.5x + 4.5 = 0.8(x + 4.5)$$

33a

$$7x + 56 = 5(x + 14)$$

show your work for your three points to graph the line, and for the check points.

$$3x + y > 5$$

$$y > -3x + 5$$

Below (0,0)

$$3(0) + 0 > 5$$

$$0 > 5$$

False

Above (0,8)

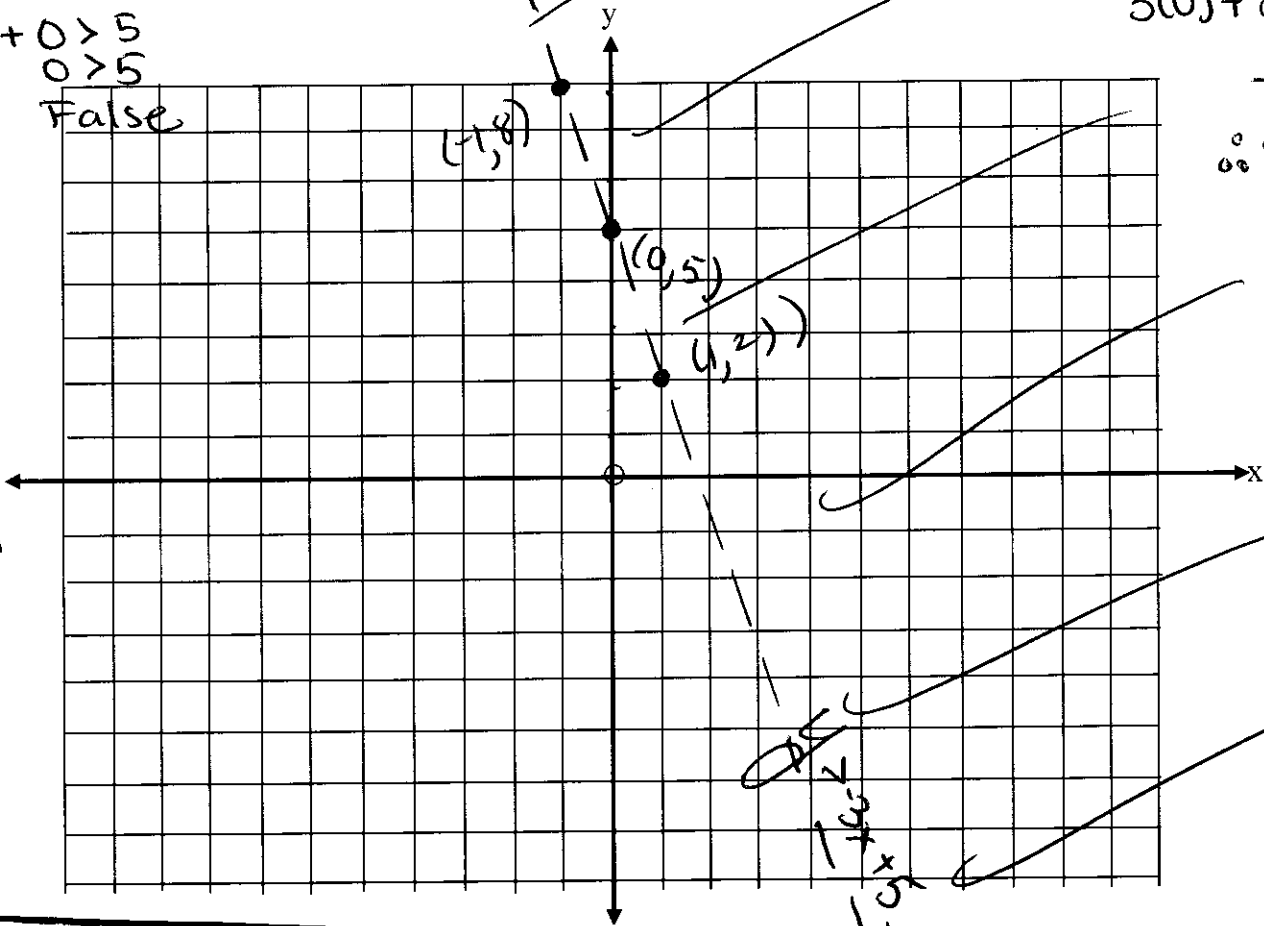
$$3(0) + 8 > 5$$

$$8 > 5$$

True

∴ Shade

+4



or  
 $x = y - 4$   
 $3x + 2y = 5$

12. Solve the following system using the method of your choice. Give the solution as an ordered pair.

$$\begin{cases} x - y = -4 \\ 3x + 2y = 5 \end{cases}$$

$$\begin{array}{r} 2x - 2y = -8 \\ 3x + 2y = 5 \\ \hline 5x = -3 \end{array} \quad \begin{array}{l} + \\ - \\ \hline \end{array}$$

$$x = -\frac{3}{5}$$

$$\begin{array}{r} -\frac{3}{5} - y = -\frac{20}{5} \\ +3 \qquad \qquad \qquad +3 \\ \hline -y = -\frac{17}{5} \\ y = \frac{17}{5} \end{array} \quad \begin{array}{l} + \\ - \\ \hline \end{array}$$

$$x = y - 4$$

$$\begin{array}{r} 3(y - 4) + 2y = 5 \\ 3y - 12 + 2y = 5 \\ \hline 5y - 12 = 5 \\ +12 \qquad \qquad \qquad +12 \\ \hline 5y = 17 \\ y = \frac{17}{5} \end{array} \quad \begin{array}{l} + \\ - \\ \hline \end{array}$$

$$\begin{array}{r} x - \frac{17}{5} = -\frac{20}{5} \\ + \frac{17}{5} = \frac{17}{5} \\ \hline x = -\frac{3}{5} \end{array} \quad \begin{array}{l} + \\ - \\ \hline \end{array}$$

+4