Sections 2.3 & 2.4 - Equations of Lines

In class work: Solve each problem.

Exercise #1   Complete the following ordered pairs to make solutions to the equation
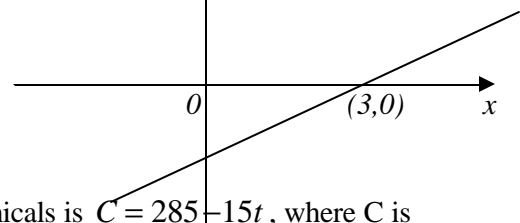$x + 2y = 8$: $(0,?),(?,0)\left(-\frac{4}{3},?\right)$

Exercise #2   Complete the table for the equation $y = \dfrac{2}{3}x$:

x	y
0	
	2
-1	
	3/2

Exercise #3   The graph of $2x - 3y = 6$ is given .

a) Is $(0,0)$ a solution?

b) Is $(3,0)$ a solution?

c) Is *(-2,1)* a solution?
Prove algebraically and graphically.

Exercise #4   An equation for the concentration of toxic chemicals is $C = 285 - 15t$, where C is
the concentration in part per milliliter (ppm), and *t* is the number of years from now.
a)   Find the intercepts of the graph and graph the equation using the intercepts.
b)   What is the significance of the intercepts ?

Exercise #5   A computer store budgets $12,000 to buy computers and laser printers. Each computer costs $650
and each printer costs $200.
a)   Write an equation that models the given situation.
b)   Sketch the graph. Be sure to label the axes clearly.
c)   What is the significance of the intercepts?
d)   If the store buys 4 computers, how many printers can they buy?

Exercise #6   What is the equation of the
a)   horizontal line that passes through (2,3) ?
b)   vertical line that passes through (4,-3) ?
c)   *x*-axis?   d) *y*-axis?

Exercise #7   The weight (in kilograms) of a pumpkin is measured as it grows over a particular month. After 2
days, the pumpkin weighed 3 kilograms while at 31 days, the pumpkin's weight was 9 kilograms.
a. Assuming the weight is growing at a linear rate, find a formula that gives the weight "W" (in
kilograms) in terms of the number of days "D
b. What are the units of the slope and what does it mean in this problem.

Exercise #8   Find an equation of the line satisfying each of the conditions:
a)   slope 4 and passing through $(-2,3)$;

b)   passing through $(-1,2)$ and $(3,-5)$.

c)   Passing through $(7,8)$ and x-intercept =3.

Exercise #9   Are the lines given by these equations parallel, perpendicular or neither?

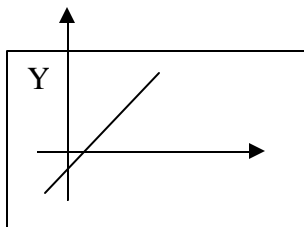$$y - \frac{2}{3}x = 0;\ \ 3y = 2x + 1.$$

Exercise #10 Match the graphs (I) – (VI) with the equations given below. (You shouldn't need to graph each equation to determine which is which!) NOTE: The x and y scales may be unequal. Show all work.

a. $y = .005x + .009$ b. $x = -py$ c. $y = \dfrac{5}{2} - \dfrac{3}{4}x$ d. $x - \sqrt{1000} = 0$ e. $3x + 4y + 10 = 0$
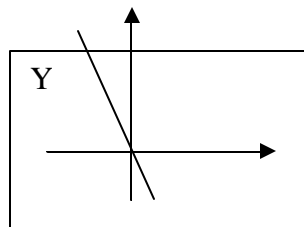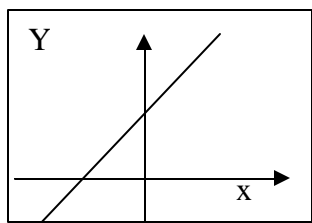
f. $y = 351x - 140$
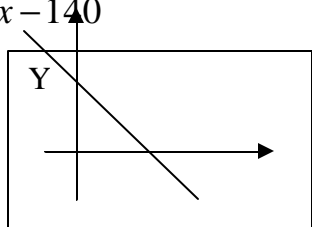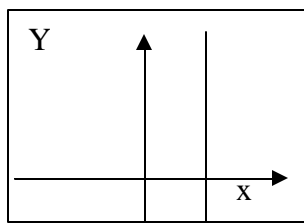

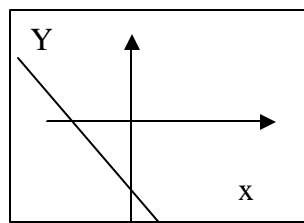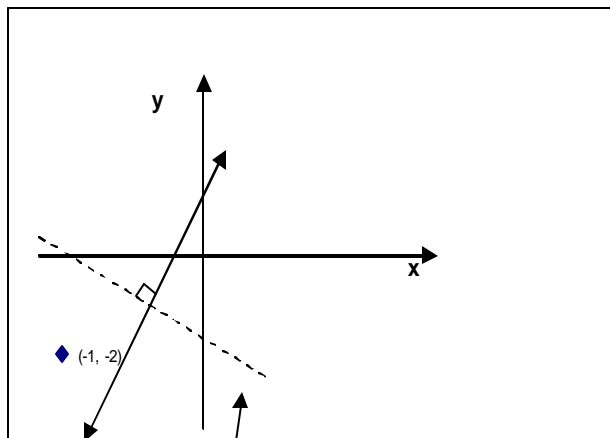|		
(I)	(II)	(III)

(IV)	(V)	(VI)

Exercise #11 Find an equation of the line that passes through the point (-1,2) and is

  a) perpendicular to $\dfrac{5}{18}x + \dfrac{1}{6}y = \dfrac{2}{3}$; b) parallel to $\dfrac{5}{18}x + \dfrac{1}{6}y = \dfrac{2}{3}.$

Exercise #12 Find the equation of the solid line graphed below.

$$\frac{1}{2}x + \frac{5}{4}y + 2 = 0$$

Exercise #13 Which one of the following is true?
  a) A linear function with nonnegative slope has a graph that rises from left to right.
  b) Every line has an equation that can be expressed in slope-intercept form.
  c) The graph of the linear function 5x+6y=30 is a line passing through the point (6,0) with slope -5/6.
  d) The graph of x=7 in the rectangular coordinate system is the single point (7,0).

Exercise #14 Write the slope-intercept equation of a function f whose graph passes through (-5,6) and is perpendicular to the line that has an x-intercept of 3 and a y-intercept of -9.