Name: _____

Paper HW #5 Due 9/15/15
M110

Instructions: *Complete these problems for homework due on the 5th night of class. These should look very similar to those that were covered during our 4th meeting. This covers material on §3.2-3.4.*

1. Find the slope of each line described below

a. (-5, 3) and (-2, -7)

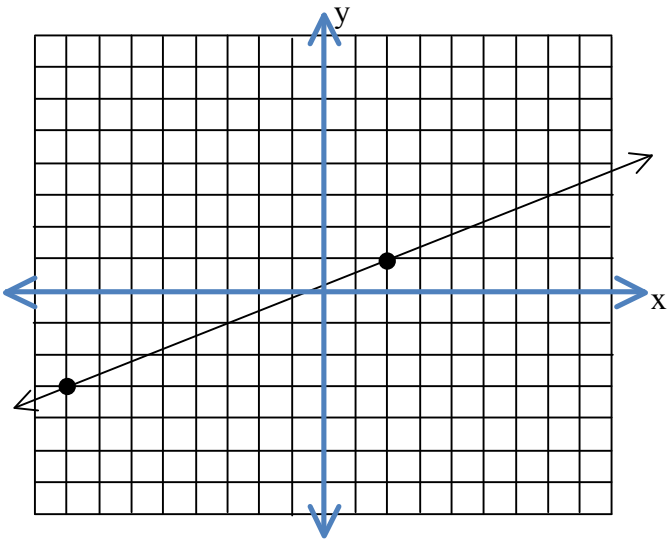
b. (-4, 4) and (-4, 1)

c. (3, 6) and (-4, 6)

d.

x	y
-1	-5
1	-9
3	-13

e.



f. Perpendicular to the line $y = {}^{-3}/_{5}\,x + 2$

g. Parallel to x = 3.

h. Perpendicular to x = 3.

2. Give an equation for the line with the following characteristics. Use slope-intercept form where possible.

a. With $m = {}^{-2}/_{3}$ passing through (0, -1)

b. Passing through (0, -3) and (-4, 2)

c. Vertical through the point (-1, 4)

d. For the line perpendicular to x = 3 through $(0.5, {}^{2}/_{3})$

e. Described by the following story:

*If cost a gallon of regular gas in the US rose in approximately linear manner from year to year between 1980 and 2010, create a model to describe cost a gallon of regular gas in the US from 1980 through 2010. The cost a gallon of regular gas in the US, in 1980 was $1.25. In 2010 the cost a gallon of regular gas in the US, was $2.30. Find a model for **G**, cost a gallon of regular gas in the US, **t** years after 1980. Give as a decimal to the nearest tenth of a cent (3 decimal).*

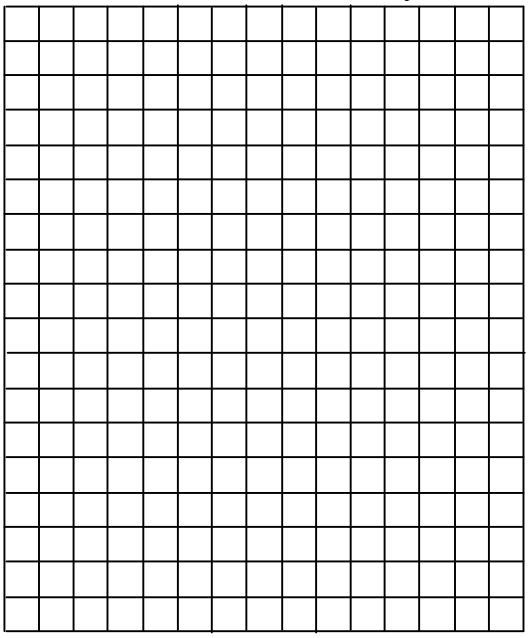
3. A car company gives a rebate of $3 thousand on every car purchased during the holiday weekend. The ***net amount paid*** by the customer is the price of the car taking into account the amount saved by the rebate. Let ***P*** be the net amount paid, and ***C*** be the car price before the rebate, both in dollars.

a. Complete the table below, showing the arithmetic to find the pattern relating ***P*** and ***C***.

Car Price ($ thousand), ***C***	Net ($ thousand), ***P***
12	
27	
33	
42	
C	

b. Give the unit analysis for this situation to show that ***C***'s units do lead to ***P***'s units for your model.

c. Plot the points in part a) and draw the linear model.
Use only the first quadrant and a scale of $3 thousand.



d. Do you think there is model breakdown in this situation? Explain.

e. Using arrows, show on your model the predicted net amount paid for a $45 thousand car.
Give the cost here.

4. The nominal income in the US in 1980 was of \$16.4 thousand. Each year the nominal incomes have increased by \$1.05 thousand. Let **N** be nominal income (in thousands of dollars), **t** years after 1980.

a. What is the slope of the linear model that describes this situation?

b. Explain what the slope means in this situation.

c. What is the **N**-intercept of the model?

d. What does the **N**-intercept mean in this situation?

f. Find an equation for the linear model.

g. Predict nominal income in 2015.

5. Graph the following equation, on the graph shown, using the slope and the y-intercept. Label 3 points on the line & the line appropriately.

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