Name_____ Chapter 3 – Review

1. The table shows the population of a small town for each year from 2003 to 2010.

Year	2003	2004	2005	2006	2007	2008	2009	2010
Population	21,359	22,906	22,542	23,048	23,562	23,609	24,008	24,716

a. Determine a linear regression equation for the data. Round the slope and *y*-intercept to the nearest whole number. **Let x = 0 represent the year 2000.**

b. Identify the correlation coefficient, or *r*-value, of the line. What does this value tell you?

c. Predict the population for the year 2020. Show your work and explain your reasoning.

2. Holly has $150 to spend at the shopping mall. She decides to buy sweaters and pants with her money. Sweaters cost $35 each and pants cost $20 each.

a. Write an equation to represent this problem situation. Use *s* to represent the number of sweaters and *p* to represent the number of pants.

b. If Holly buys 3 sweaters, what is the greatest number of pants she can buy? Show your work and explain your reasoning.

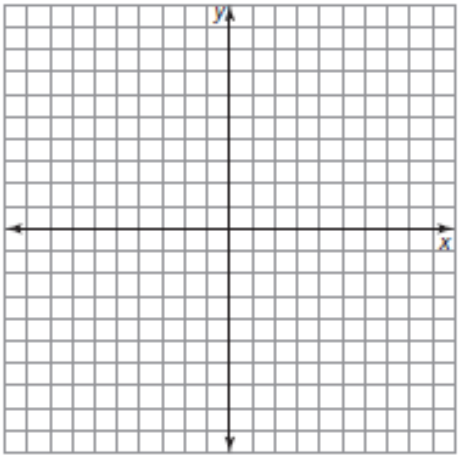
c. If Holly buys no pants, what is the greatest number of sweaters she can buy? Show your work and explain your reasoning.

3a. Graph the following lines on the graph below:

x = 2

y = -4

y = -3x + 5



4. Write the equation $y = -\frac{1}{4}x + 3$ in standard form.

5. Write the equation $2x + 3y = 9$ in slope-intercept form.

a. Find the x-intercept and y-intercept.

6. Mia is walking away from a light pole at a rate of 4 feet per second. If she starts at a distance of 6 feet from the light pole, which of the following gives her distance, *d*, from the light pole after walking for *t* seconds?

(1) $d = 4t + 6$

(2) $d = \frac{3}{2}t$

(3) $d = 6t + 4$

(4) $d = -6t + 4$

7 Harland owns a vegetable stand. He grows and sells his own vegetables at a stand in the city. He charges $0.75 for each tomato, and each month five lucky passers-by get a free tomato. Harland always sells more tomatoes than he gives away.

a. Write a linear function to represent the amount Harland earns each month. Let *x* represent the number of tomatoes distributed.

b. How much would Harland earn in a month if he distributed 80 tomatoes to customers? Show your work.

c. The next month, Harland decides to also sell cucumbers for $0.60 each. Each month three lucky passers-by get a free cucumber. He always sells more cucumbers than he gives away. Write a linear function to represent the amount of money Harland earns each month from cucumber sales. Let *x* represent the number of cucumbers distributed.

8. The temperature is falling outside at a steady rate of 4 degrees Fahrenheit every hour. If the temperature starts at 68°F, do the following.

(a) Fill out the table below for the outside temperature during the time it is cooling down.

Time Cooling ,*t*, (hours)	0	1	2	3
Temperature, F, (Fahrenheit)				

(b) Write a linear equation that relates the Fahrenheit Temperature, F, to the time in hours, *t*, that it has been falling.

(c) According to your equation, what is the temperature when $t = 2.75$

(d) If this cooling continues at this constant rate, how many hours will it take for the temperature to reach the freezing point of water? Show your work.