Math Q114 Exam 2 Review   **Pawlak**
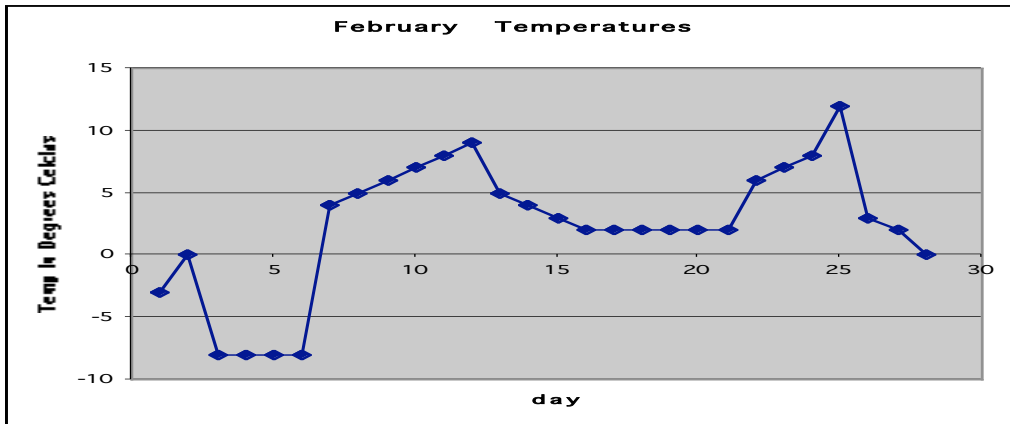
1. Use the graph below for February temperatures to answer the following questions.

a. Identify one interval when the average rate of change of the temperature was positive
b. Identify one interval when the average rate of change of the temperature was zero (0)
c. . Identify one interval when the average rate of change of the temperature was negative .
d. Identify the minimum and maximum values for this graph.

2. The table below indicates the number of deaths in motor vehicle accidents in the United States:

Year	Motor Vehicle Deaths
1970	114,638
1980	105,718
1990	91,983
1992	86,777

For motor vehicle deaths between 1970 and 1992, Calculate the
 a) absolute change   b) percentage change   c) average rate of change

3. Write an equation for the line with a slope of -0.75 and which passes through the point (8,-9). Show how you derived the equation. (2pts)

4. A print-on-demand publisher charges a one time set-up fee of $1245 and then an additional $2.50 for each copy of the book printed
a) Write an equation for the cost of printing a story collection as a function of the number of books printed.

b) How much would it cost to publish 1500 books?

5. The mean personal income for women is given by the chart below

Education (years)	8	10	16
Income ($)	13989	18613	32485

Is there a linear relationship between education and income? Support your conclusion.

6. Identify the slope and y intercept for each of the following:
a) $y = -2x + 3$ b) $4x - 8y + 24 = 0$ c) $y = 9$

7a.   The percentage of adults who smoke has been declining since 1960 as given by the equation below, in which A is the percentage of adults who smoke and N is years since 1960:
          $A = -0.6N + 42.5$
What percentage of adults will be smoking in the year 2009 based on this regression equation?

7b. The regression lines for adult male smokers and adult female smokers are given below:
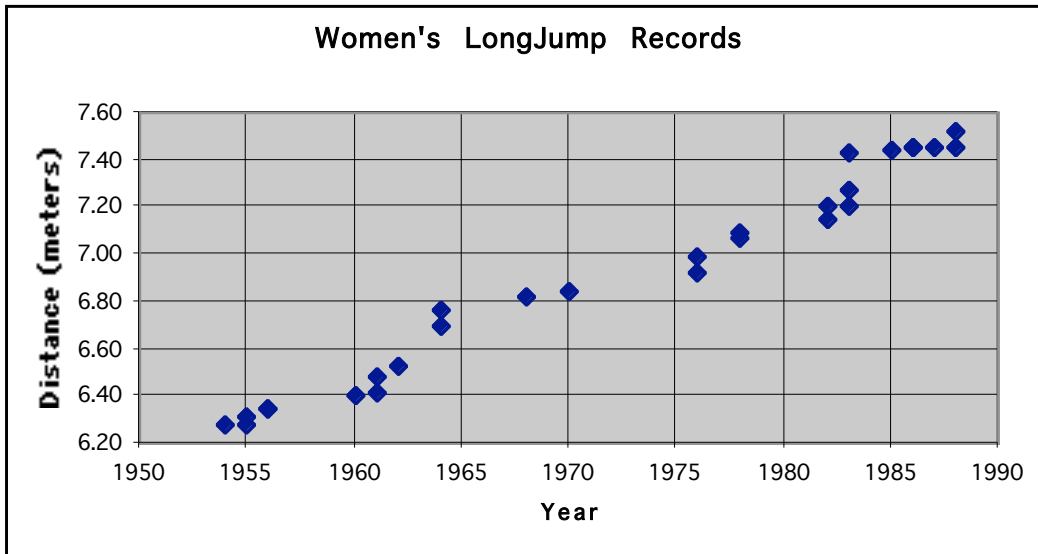
M = -0.8N + 50.3   and   F = -0.4N + 35.3

After what year will there be a lower percentage of adult males smoking than females?
(N = years since 1960)

8. The following table shows the number of cigarettes consumed in the U.S.

Year	U.S. Consumption of Cigarettes
1960	484,400,000,000
1970	536,400,000,000
1980	631,500,000,000
1990	525,000,000,000
1997	480,000,000,000

   a) What was the average rate of change in cigarette consumption between 1960 and 1980?
       Between 1980 and 1997?
   b) The total number of cigarettes consumed in the U.S. in 1960 is very close to the number of
   cigarettes consumed in 1997. Does that mean that smoking was as popular in 1997 as it was in
   1960? Explain your answer.

9. The following graph shows the world records for the women's long jump.

   a) On the grid above, sketch a straight line that is an approximate mathematical model for the data.
   b) Clearly identify your choice for independent and dependent variable and units.
   c) Find the equation for your line.
   d) Interpret the slope of the linear equation you found in terms of long jump records and years.

   10. a)Solve the equation below for y .

$$6y + 4x = 12$$

   b) Find the y-value when x = -2

11. Draw a best fit line by hand for a scatter plot. Find the average rate of change for the line and explain its meaning in a complete sentence. Derive the equation of the line.

12, Use Excel to create a scatter plot after rescaling the x-axis. Use Excel to create a regression line, it's equation, and R-squared value. Identify the average rate of change for the line and explain its meaning in a complete sentence. Find the Correlation coefficient. Use the equation of the regression line to extrapolate or interpolate a data point.