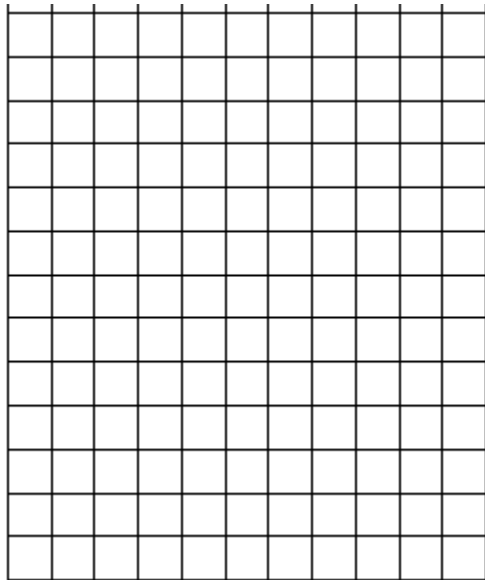


Chapter 7: Practice with Linear Regression #2

1) Since 1990, fireworks usage nationwide has grown, as shown in the accompanying table, where t represents the number of years since 1990, and p represents the fireworks usage per year, in millions of pounds.

Number of Years Since 1990 (t)	0	2	4	6	7	8	9	11
Fireworks Usage per Year, in Millions of Pounds (p)	67.6	88.8	119.0	120.1	132.5	118.3	159.2	161.6

a) Construct a scatter plot. Describe the direction, form, and strength.



b) Find the equation of the linear regression model for this set of data, where t is the explanatory variable. Round values to *four decimal places*.

c) Using this equation, determine in what year fireworks usage would have reached 99 million pounds.

d) Based on this linear model, how many millions of pounds of fireworks would be used in the year 2008? Round your answer to the *nearest tenth*.

6) The accompanying table illustrates the number of movie theaters showing a popular film and the film's weekly gross earnings, in millions of dollars.

Number of Theaters (x)	443	455	493	530	569	657	723	1,064
Gross Earnings (y) (millions of dollars)	2.57	2.65	3.73	4.05	4.76	4.76	5.15	9.35

a) Write the linear regression equation for this set of data, rounding values to *five decimal places*. Identify the correlation coefficient and explain what it tells you about the data.

b) Using this linear regression equation, find the approximate gross earnings, in millions of dollars, generated by 610 theaters. Round your answer to *two decimal places*.

c) Find the minimum number of theaters that would generate at least 7.65 million dollars in gross earnings in one week.

7) Explain association versus correlation. Explain the conditions for applying correlation.