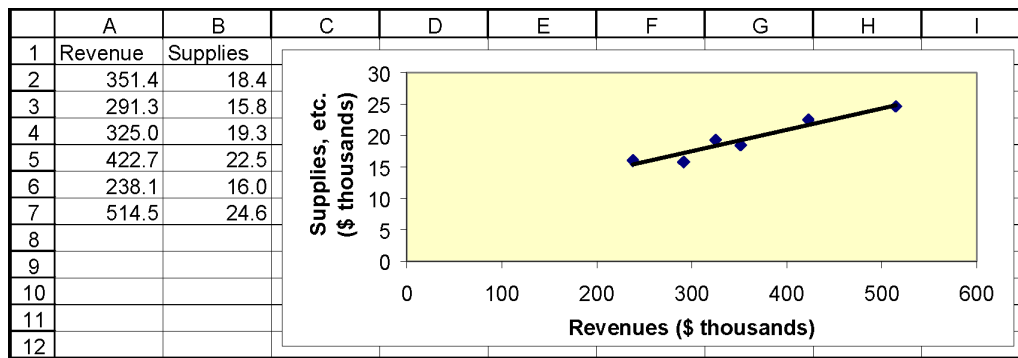


Practice 2 Solutions

2.39 In a positive linear relationship, y tends to increase linearly with increases in x . In a negative linear relationship, y tends to decrease linearly as x increases.

2.40 When there is no relationship between two variables, the slope of the best-fit straight line will tend to be zero.

2.42 p/p/m We can use Excel to plot the data for us. As we can see from the graph, there does appear to be a strong linear relationship between service revenues and expenses for supplies. The relationship appears to be a direct relationship; that is, as revenues increase, supply expenses increase. Note: The line in the graph below was actually fitted by Excel. Lines "eyeballed" by humans may vary.



3.6 $\bar{x} = 972.21/15 = \$64.81$. Median = \$65.50, the middle value when the data are arranged in order of size.

3.9 $\bar{x} = 90(0.35) + 78(0.45) + 83(0.20) = 83.2$

3.11 d/p/d

- Mean will be higher since salaries are usually skewed to the right. Management will emphasize the mean to make the present wage situation look brighter.
- The union representative will wish to make the present wage situation look worse and therefore will emphasize the median.

3.16 d/p/d An ad claim such as "Get up to 70% more miles per gallon by using product x." Most cars tested may have obtained little or no increase in mpg.

3.19 c/a/m

- a. $\mu = 203.8/7 = 29.11$ million visitors. Median = 22.4 million visitors. Range = $61.7 - 17.2 = 44.5$ million visitors.

Midrange = $(61.7 + 17.2)/2 = 39.45$ million visitors.

- b. $MAD = 90.943/7 = 12.99$ million visitors.
- c. $\sigma^2 = 1668.769/7 = 238.396$, $\sigma = 15.44$ million visitors.

3.20 c/a/m

- a. $\bar{x} = 229/11 = 20.82$ cents. Median = 18 cents. Range = $55 - 2 = 53$ cents. Midrange = $(2 + 55)/2 = 28.5$ cents.

- b. $MAD = 133.454/11 = 12.13$ cents.

- c. $s^2 = 2553.6/10 = 255.36$, and $s = \sqrt{255.36} = 15.98$ cents

3.23 c/a/m With the data arranged in order of size:

First quartile is in ranked position $(11 + 1)/4 = 3$; $Q_1 =$ first quartile = 7

Second quartile is in ranked position $2(11 + 1)/4 = 6$; $Q_2 =$ second quartile = 18

Third quartile is in ranked position $3(11 + 1)/4 = 9$; $Q_3 =$ third quartile = 30

Interquartile range = $30 - 7 = 23$; quartile deviation = $23/2 = 11.5$

