Homework #3

58. [Page 128]

58. The average American spends $65.88 per month dining out (*The Des Moines Register*, December 5, 1997). A sample of young adults provided the following dining out expenditures (in dollars) over the past month.

253	101	245	467	131	0	225
80	113	69	198	95	129	124
11	178	104	161	0	118	151
55	152	134	169			

a. Compute the mean, median, and mode.
b. Considering your results in part (a), do these young adults seem to spend about the same as an average American eating out?
c. Compute the first and third quartiles.
d. Compute the range and interquartile range.
e. Compute the variance and standard deviation.
f. The skewness measure for this data is 1.54. Comment on the shape of this distribution. Is this the shape you would expect? Why or why not?
g. Do the data contain any outliers?

Do not do Question f.

Instead, build a box plot for the data.
You can use stat software to create the boxplot. Please make sure you explain the values of each of the quartiles, wiskers, etc.

(a)

Mean: **138.5**

Median: 129

Mode: 0

(b) Based on the observations above, these young adults seem to be spending the much more than an average American eating out.

(c) First Quartile : 87.5

Third Quartile : 173.5

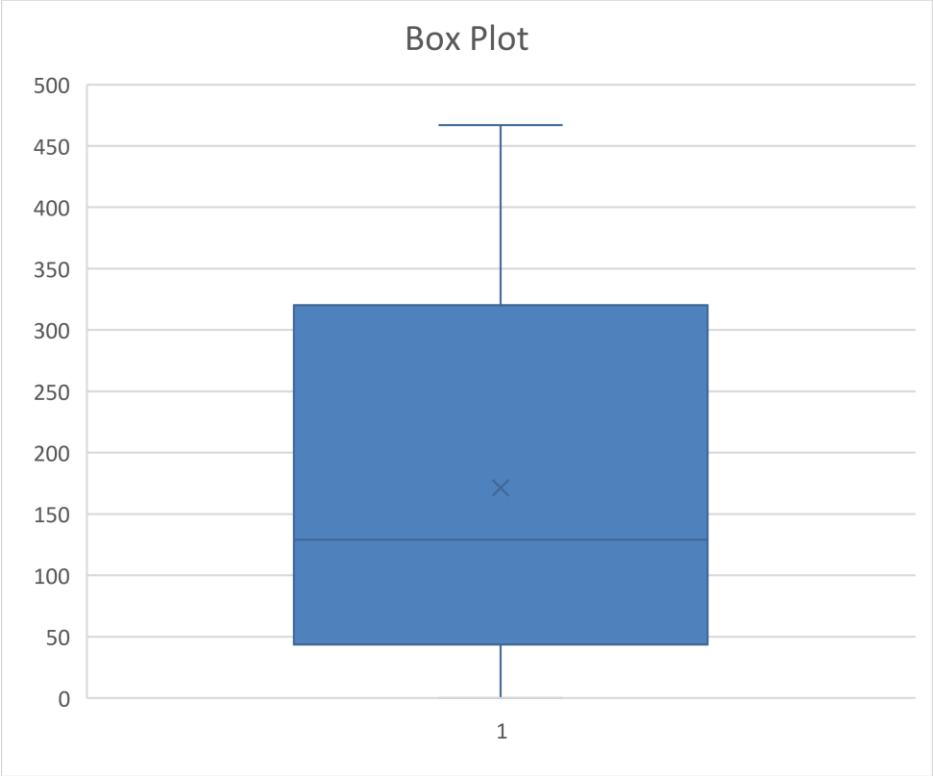
(d) Range = 467 – 0 = 467

IQR = Q3 – Q1 or 173.5 – 87.5 = 86

(e) Variance = 9271.01

Std Deviation = 96.28

(f)



Upper Whisker – Maximum value at 467
Lower Whisker- Minimum Value at 0
Middle Line -Median at 129
Colored box represents the middle 50 percent of the values

(g) Yes, there is one outlier which is greater than Q3 + 1.5*IQR or 302.5. This outlier is 467 dollars.

60. A survey conducted to assess the ability of computer manufacturers to handle problems quickly obtained the following results (*PC Computing*, November 1997).

Company	Days to Resolve Problems	Company	Days to Resolve Problems
Compaq	13	Gateway	21
Packard Bell	27	Digital	27
Quantex	11	IBM	12
Dell	14	Hewlett-Packard	14
NEC	14	AT&T	20
AST	17	Toshiba	37
Acer	16	Micron	17

a. What are the mean and median number of days needed to resolve problems?
b. What are the variance and standard deviation?
c. Which manufacturer holds the best record?
d. What is the z-score for Packard Bell?
e. What is the z-score for IBM?
f. Do the data contain any outliers?

(a) Mean = 18.57 Median = 16.5
(b) Variance = 53.49
Std Deviation = 7.31

c) Quantex

d) z-score for Packard Bell = 1.152

e) z-score for IBM = -0.898

f) Yes, there is only one outlier. Toshiba which takes 37 days to resolve problems

66. [Page 130]

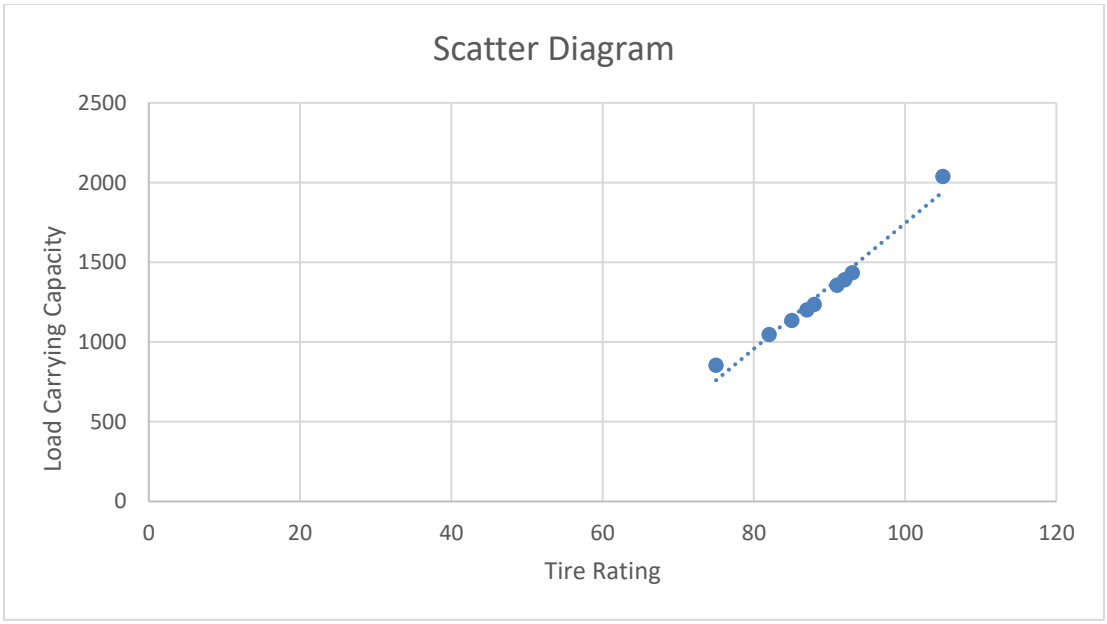
66. *Road & Track* provided the following sample of the tire ratings and load-carrying capacity of automobiles tires.

Tire Rating	Load-Carrying Capacity
75	853
82	1047
85	1135
87	1201
88	1235
91	1356
92	1389
93	1433
105	2039

a. Develop a scatter diagram for the data with tire rating on the x-axis.
b. What is the sample correlation coefficient, and what does it tell you about the relationship between tire rating and load-carrying capacity?

Additionally, compute the covariance.

(a)



(b) Sample Correlation Coefficient is = 0.9856357

The points fall close to the line, which indicates that there is a strong linear relationship between the variables. The relationship is largely positive because as one variable increases, the other variable also increases. Also, the correlation coefficient is closer to 1,

which indicates a strong positive linear relationship between tire rating and load carrying capacity.

Covariance of the sample = 2710.315