A06 Correlation Assignment

Name: Max Hodgen Grade = out of 14 points

SET A

Hours/day using Cell Phone	1st Semester Grade in English (out of 100)
0.5	89.0
5.7	68.0
3.1	75.0
2.7	79.0
0.5	97.0
2.4	82.0
2.8	78.0
6.0	37.0
5.6	71.0
4.9	71.0
3.8	77.0
2.6	85.0
1.8	80.0
2.0	84.0
3.0	75.0
7.0	45.0
5.8	60.0
4.5	72.0
1.5	93.0
0.5	79.0
3.0	74.0
2.1	82.0

Part 1 -

a. For the data in SET A, use Minitab to calculate the correlation coefficient ("r") for the relationship between the two variables. Copy and Paste the Sessions Window below.

Sessions Window: (1 point)

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Pearson correlation of Cell Phone Usage (Hours/Day) and
English % Grade = -0.856
P-Value = 0.000
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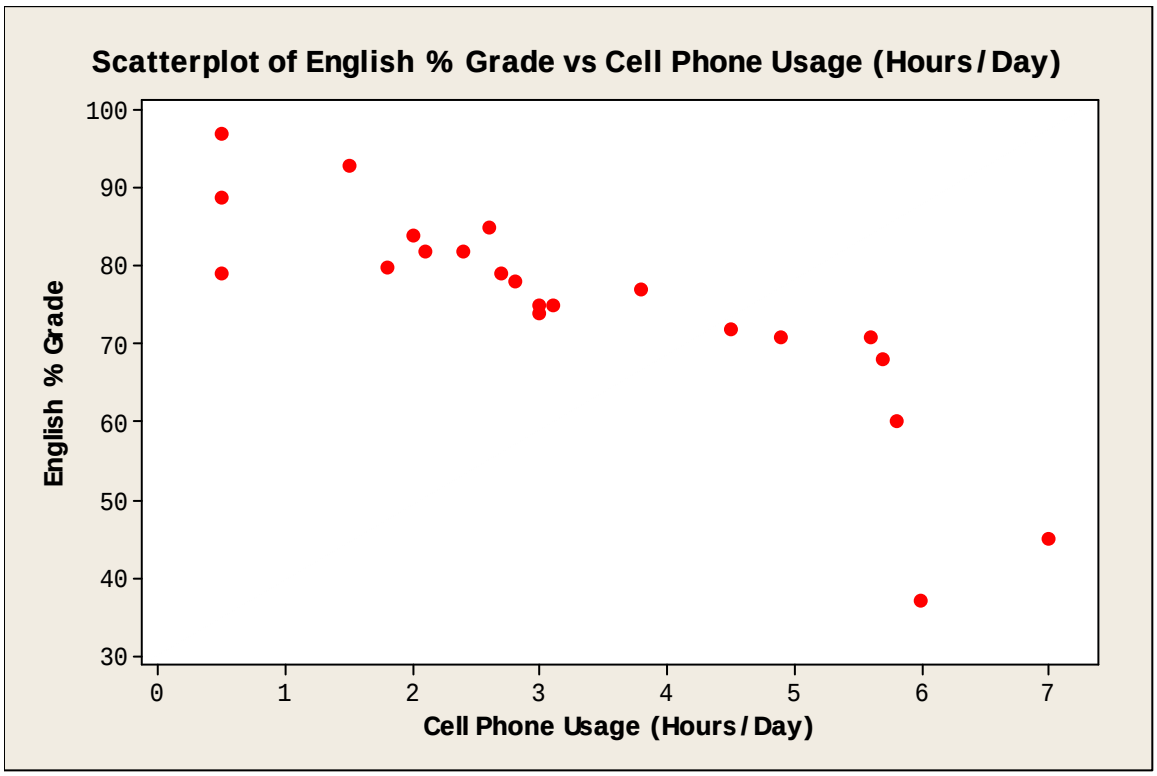
b. Although the scatter plot is a visual aid and ***not*** a *statistical test,* it is still very useful in getting a better "picture" of the data In Minitab, use "Graph" to create a scatterplot of the data in SET A. Copy and paste the scatterplot in the space below. (2 points)



c. Describe the relationship between the two variables by using:

The calculated value of "r" (correlation coefficient),
The p-value,
The names of the variables, and
What is shown on the scatterplot? (4 points)

The scatter plot visually shows a trend that student's English grades go up as their cell phone usage decreases. The correlation coefficient between cell phone usage and English grades is a – 0.856, which means there is a strong to extremely high inverse relationship. As cell phone usage increases the student's English grade decreases. Also, with a p-value of 0.00 there is less than a 1% probably that the correlation was a result of random variation.

Part II -

SET B

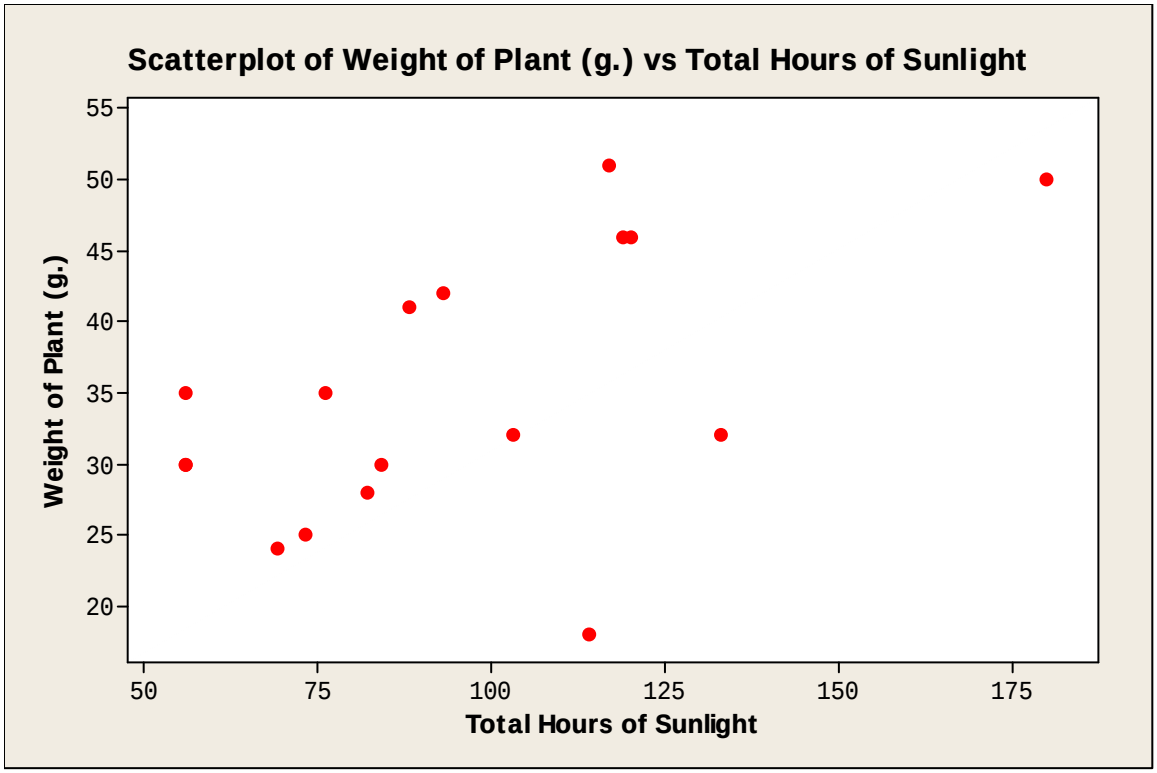
Total Hours of Sunlight	Weight of Plant (g.)
56	30
180	50
120	46
76	35
93	42
117	51
88	41
119	46
56	30
133	32
84	30
56	35
103	32
114	18
73	25
69	24
82	28

a. For the data in SET B, use Minitab to calculate the correlation coefficient ("r") for the relationship between the two variables. Copy and Paste the Sessions Window below.

Sessions Window: (1 point)

Pearson correlation of Total Hours of Sunlight and Weight of Plant (g.) = 0.537
P-Value = 0.026

b. In Minitab use, "Graph" to create a scatterplot of the data in SET B. Copy and paste the scatterplot in the space below. (2 points)



c. Describe the relationship between the two variables by using:
The calculated value of "r" (correlation coefficient),
The p-value,
The names of the variables, and
What is shown on the scatterplot? (4 points)

The scatter plot shows a bit of a trend that the weight of a plant increase as the plant's sunlight exposure also increases. The correlation coefficient between the two variables is 0.537, showing a moderate direct relationship. The low p-value of 0.026 means there is over a 97% probably that the r value is a true correlation.