LDG 660 SPSS Assignment 2

The following data represent advertising dollars spent and company sales for Nyack Electronics, Inc. for the months of January, 2020 thru August, 2020.

For illustrative purposes, we can tell that in the month of January, Nyack Electronics, Inc. spent $2,400 in advertising and had corresponding company sales of $225,000. Therefore, this would be a point on the scatterplot: (2400, 225000).

Conduct the steps below to complete the lab.

There are 5 steps (each worth 15 pts). The lab, in total, is worth 75 pts.

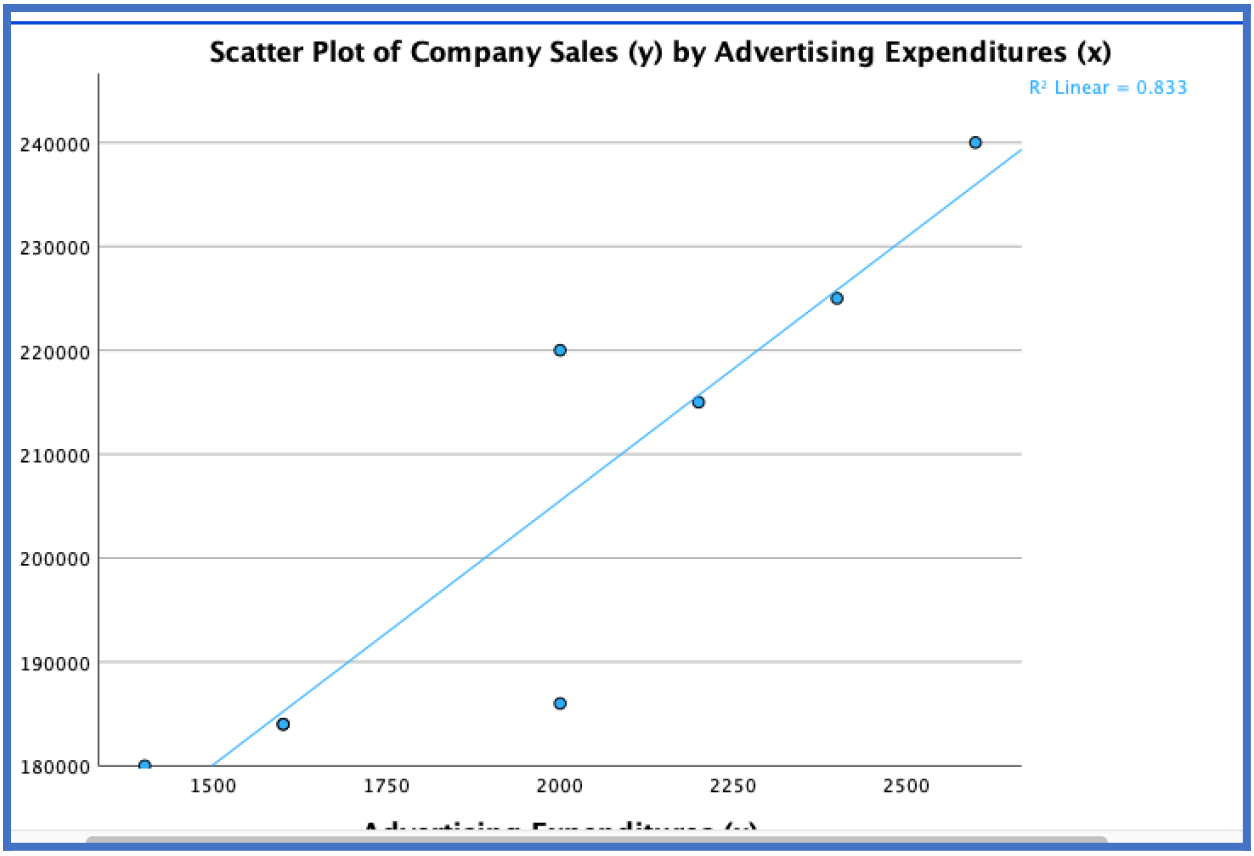
Step 1 (15 pts): Import the data into SPSS. Insert an image/screenshot below to confirm this.

	Month_of_Year_2020	Advertising_Expenditures_x	Company_Sales_y
1	Jan	2400	225000
2	Feb	1600	184000
3	Mar	2000	220000
4	Apr	2600	240000
5	May	1400	180000
6	Jun	1600	184000
7	Jul	2000	186000
8	Aug	2200	215000

Step 2 (15 pts): Generate a scatterplot

Note: You could do this via:

(1) Graphs → Chart Builder



Comment on what you see/what you can infer from the scatterplot. Does there appear to be a relationship between x and y – Advertising Expenditures and Company Sales?

- **There appears to be a strong positive relationship. The more that is spent on advertising there is a climb in company sales. As X increases, Y increases also.**

Step 3 (15 pts): Run a simple linear regression (remember which is 'x' and which is 'y'!).

Note: You could do this via:

(1) Analyze → Regression → Linear

Insert an image/screenshot of the output.

Regression

Variables Entered/Removed[a]

Model	Variables Entered	Variables Removed	Method
1	Advertising Expenditures (x)[b]	.	Enter

a. Dependent Variable: Company Sales (y)

b. All requested variables entered.

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.913[a]	.833	.806	10290.320

a. Predictors: (Constant), Advertising Expenditures (x)

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	3178155870	1	3178155870	30.014	.002[b]
	Residual	635344130	6	105890688		
	Total	3813500000	7			

a. Dependent Variable: Company Sales (y)

b. Predictors: (Constant), Advertising Expenditures (x)

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	104060.729	18646.221		5.581	.001
	Advertising Expenditures (x)	50.729	9.260	.913	5.478	.002

a. Dependent Variable: Company Sales (y)

Step 4 (15 pts): What does the output tell you? Comment specifically on the p-value for the overall model (is it significant and how can you tell). Comment on the R-squared value and what it means.

- **R= 0.913 – Strong positive correlation, good correlation between advertising expenditures and company sales**

- **R-sq = 0.833 coefficient of determination = 83.3% of the changes in company sales is attributable to its relationship with the advertising expenditures. The remaining ~17% is caused by other factors/variables. The best way to influence company sales is to spend more money on advertising dollars.**

- **p-value is 0.002. This p-value is less than 5% indicating that a significant relationship exists between advertising expenditures and company sales.**

Step 5 (15 pts): What is the equation for the regression line? What is the predicted company sales if advertising expenditures were $1,800?

Regression model: y=mx+b

Company Sales (y) = m 50.729 (Adv Exp) + b (Constant) 104,060.729

Company sales = [50.729*1800] + 104,060.729

195,372.929