

NAME: \_\_\_\_\_

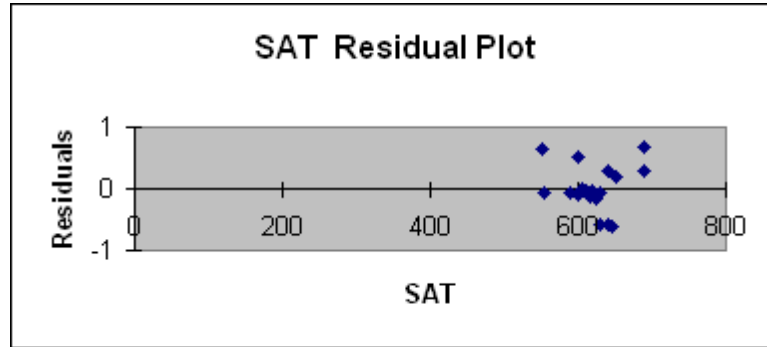
Show **ALL** of your work in a legible and organized fashion.

**4 Questions and Problems**

- At State University, a study was done to establish whether a relationship existed between a student's GPA when graduating and SAT score when entering the university. The sample data are reported as follows.

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.24343189
R Square	0.05925908
Adjusted R Square	0.0069957
Standard Error	0.36843942
Observations	20



ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	0.153918063	0.153918	1.133855	0.301030816
Residual	18	2.443456937	0.135748		
Total	19	2.597375			

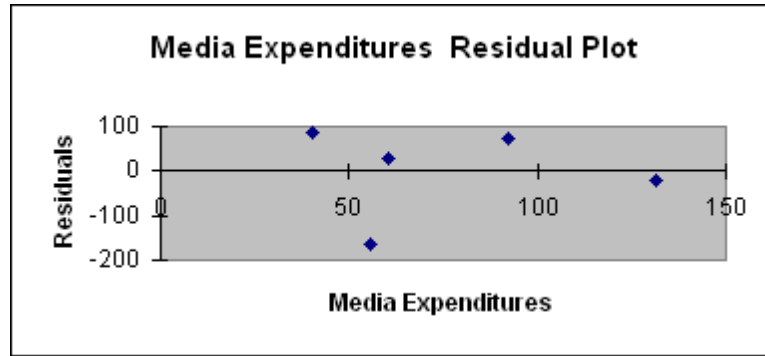
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	1.46268329	1.490612234	0.981263	0.339469	1.668976803	4.594343	-1.66898	4.594343
SAT	0.00255307	0.002397638	1.064826	0.301031	0.002484183	0.00759	-0.00248	0.00759

Analyze the above regression output using a significance level of 10%.

2. The following data show the case sales (millions) and the media expenditures (millions of dollars) for five major brands of soft drinks. Plug these numbers in to Microsoft Excel and answer the following questions based on the regression output tables from Excel.

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.98580635
R Square	0.97181416
Adjusted R Square	0.96241888
Standard Error	117.252072
Observations	5



ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	1422048.883	1422049	103.4364	0.002025575
Residual	3	41244.14511	13748.05		
Total	4	1463293.028			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	-208.408564	133.5456965	-1.56058	0.216536	633.4105725	216.5934	-633.411	216.5934
Media Expenditures	16.4359022	1.616057504	10.17037	0.002026	11.29288593	21.57892	11.29289	21.57892

Analyze the above regression output using a significance level of 5%.

Predict the case sales for a brand with a media expenditure of \$70 million.

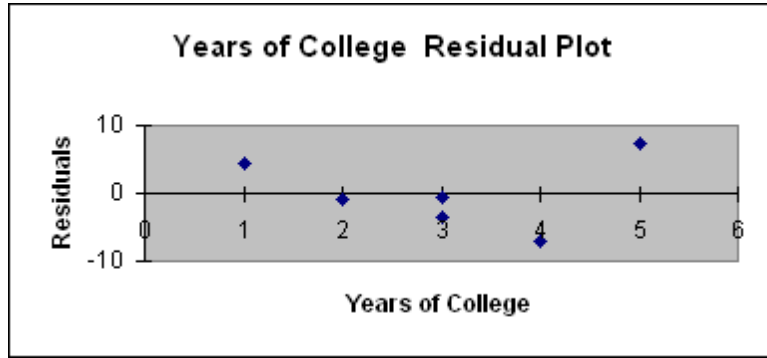
**ANSWER:**

942.023 (case sales in millions)

3. The following sample data contains the number of years of college and the current annual salary for a random sample of knowledge workers

SUMMARY OUTPUT

<i>Regression Statistics</i>	
Multiple R	0.77004687
R Square	0.59297218
Adjusted R Square	0.49121523
Standard Error	5.89491306
Observations	6



ANOVA

	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>
Regression	1	202.5	202.5	5.827338	0.073237881
Residual	4	139	34.75		
Total	5	341.5			

	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	15	6.08824003	2.463766	0.06941	-1.90366423	31.90366	-1.90366	31.90366
Years of College	4.5	1.864135188	2.413988	0.073238	0.675669019	9.675669	-0.67567	9.675669

Analyze the above regression output using a significance level of 10%.

Predict the annual income for someone with 3.5 years of college.

**ANSWER:**

30.75 (annual income in thousands)