

1. A company is interested in whether spending more money on marketing is related to the amount in sales they generate. The company kept track of how much it spent on marketing and the corresponding sales for 12 months. Below is the R output of the relationship between the amount the company spends on marketing and the sales brought in.

Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	1383.4714	1255.2404	1.102	0.296
Spend	10.6222	0.1625	65.378	1.71e-14 ***

Multiple R-squared 0.9977

- (a) Interpret the estimated **Spend** coefficient in the context of the problem.
- (b) What is the linear model for the population?
- (c) What is the regression equation sales vs spending?
- (d) What is the estimated amount in sales if the company spends \$4,500?
- (e) Looking at the data, we find that when the company spent \$4,500 the company brought in sales equal to \$50,044. Calculate the residual for when the company spends \$4,500.
- (f) Interpret the Coefficient of Determination.

- (g) What is the value of the correlation coefficient?

- (h) Interpret the value above.

- (i) Calculate a 95% confidence interval for **Spend**.

- (j) Write out the null and alternative hypothesis and use the calculated confidence interval to determine there is a linear relationship between Sales and Spending