1. Given the following data where city MPG is the response variable and weight is the explanatory variable, explain why a regression line would be appropriate to analyze the relationship between these variables:

The linear regression line will show the relationship between the MPG and weight. It will also show the value of dependency weight has on the MPG. MPG is dependent on the weight in this particular study.

|  |  |  |
| --- | --- | --- |
| **Model** | **City MPG** | **Weight** |
| Mazda MX-5 Miata | 25 | 2365 |
| Mercedes/Benz SLK | 22 | 3020 |
| Mitsubishi Eclipse | 23 | 3235 |
| Pontiac Firebird | 18 | 3545 |
| Porsche Boxster | 19 | 2905 |
| Saturn SC | 27 | 2420 |

1. Construct the regression line for this data.



1. Interpret the meaning of the y-intercept and the slope within this scenario.

The y-intercept is out of the range of the MPG data and, as a result, has no interpretation. The determination coefficient R square is 0.63. This means the least square regression line explains 63% of the variability in MPG.

1. What would you predict the city MPG to be for a car that weighs 3000 pounds?
2. If a car that weighs 3000 pounds actually gets 32 MPG, would this be unusual? Calculate the residual and talk about what that value represents.

**Review the data in the following table.**

|  |  |  |  |
| --- | --- | --- | --- |
|  | College Graduate | Not a College Graduate | Total |
| Male | 56 | 32 | 88 |
| Female | 62 | 41 | 103 |
| Total | 118 | 73 | 191 |

1. Have the assumptions for this test been met?
2. Why or why not?
3. State the null and alternative hypothesis for this test.
4. Calculate the test statistic for this test. Explain what this test statistic represents.
5. Use technology, like Excel, to calculate the p-value for this test. Explain what this p-value represents.  
   The P value is 0.625559
6. State the conclusion for this test at the 0.05 level of significance.

Chi-Sq = 0.305085

p-value = 0.581

This result is not significant at p < 0.05.

1. Do you think these variables are dependent/associated? Why or why not?