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**Take Home Portion of Midterm**

* 1. **Describe the relationship:** The Scatterplot is **Linear** with a **Positive direction**.
  2. **Find the correlation & d escribe the relationship:** The correlation between the variables Highway Fuel Consumption & CO2 is **.9805158**. This is a **Strong correlation** because the correlation is more than .8 and close to 1. ****
  3. **Find Equation of Least-Square Regression Line for Predicting CO2 emissions from highway fuel consumption. Write Equation: Text

     Description automatically generated**

The equation of Least Squares Regressions Line is **y = -6.694 + 29.444x**

* 1. **Overlay a graph of the least-squares Regression Line on your Scatterplot:**

**![Chart, scatter chart

Description automatically generated]()**

1. ![Chart, scatter chart

   Description automatically generated]()Based on my residual plot, the least square line is adequate to describe the pattern in the data because the residual plot shows **a uniform scatter of the points** and there is **no systematic pattern** to be seen from this residual plot.
2. **Slope:** For each one unit increase in CO2, we expect Highway Fuel Consumption to increase by 29.444. **Y-intercept:** When CO2 is 0 we expect the Highway Fuel Consumption to be -6.694.
3. **y = -6.694 + 29.444(6.3)**

**= 178.8032**

When Highway Fuel Consumption is 6.3, we expect CO2 Emissions to be **178.8032.** This is an example of **interpolation** because **6.3 is within the range of the x-value spanned by the data.**