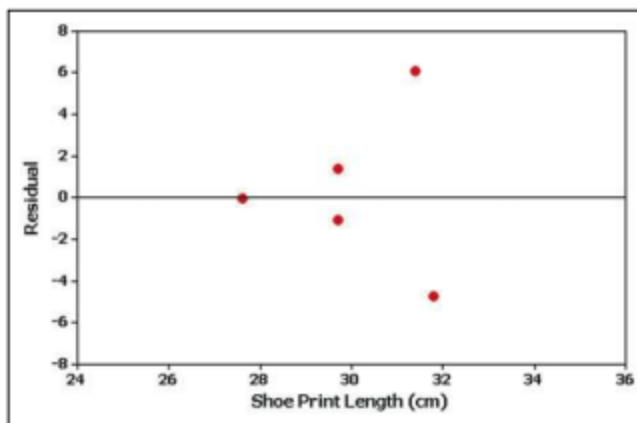
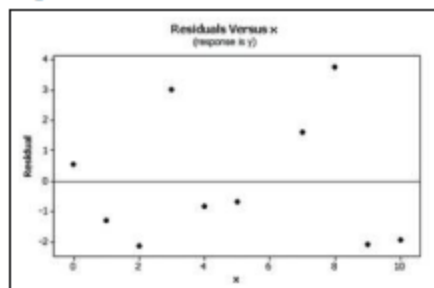


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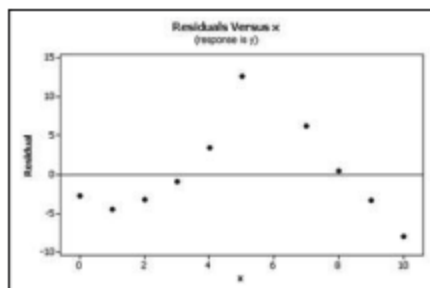


See the three residual plots below. The leftmost residual plot suggests that the regression equation is a good model. The middle residual plot shows a distinct pattern, suggesting that the sample data do not follow a straight-line pattern as required. The rightmost residual plot becomes thicker, which suggests that the requirement of equal standard deviations is violated.

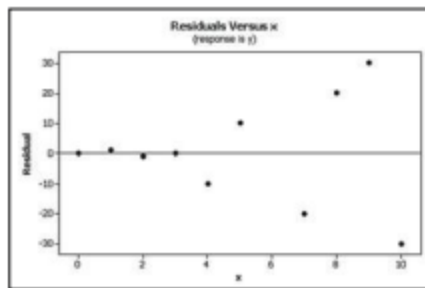
Residual Plot Suggesting That the Regression Equation Is a Good Model



Residual Plot with an Obvious Pattern, Suggesting That the Regression Equation Is Not a Good Model



Residual Plot That Becomes Thicker, Suggesting That the Regression Equation Is Not a Good Model



Complete Regression Analysis

In Part 1 of this section, we identified simplified criteria for determining whether a regression equation is a good model. A more complete and thorough analysis can be implemented with the following steps:

1. Construct a scatterplot and verify that the pattern of the points is approximately a straight-line pattern without outliers. (If there are outliers, consider their effects by comparing results that include the outliers to results that exclude the outliers.)
2. Construct a residual plot and verify that there is no pattern and also verify that the residual plot does not become thicker (or thinner).
3. Use a histogram and/or normal quantile plot to confirm that the values of the residuals have a distribution that is approximately normal.
4. Consider any effects of a pattern over time.