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❒ Calculating Linearity:

- A technique does exist that provides a precise mathematical evaluation of the linearity.
- The evaluation is based on the equation of a line that defines the relationship between the bias and the reference values of the parts or samples.
  - The bias is the value of the sample measurement minus the reference measurement.
- To calculate the line of best fit, use the equation:

$$y = ax + b$$

where:
y = bias value
a = slope of the line
x = reference value
b = the y-intercept

- To calculate the slope, a:

$$a = \frac{\sum xy - \frac{(\sum x)(\sum y)}{n}}{\sum x^2 - \frac{(\sum x)^2}{n}}$$

where:
n = total number of measurements made

- To calculate the y-intercept, b:

$$b = \bar{y} - a \times \bar{x}$$

- With values for a and b, we can complete the regression equation (y = ax + b); it gives us the line of best fit.