Significant Figures

Reporting Computed Data

- One of the best ways of indicating reliability is to give **a confidence limit at the 90% or 95% confidence level**.

- Another method is to report the **absolute standard deviation** or the **coefficient of variance** of the data.

Rules to Determine the Number of Significant Figures

1. All **nonzero digits** are significant.

2. An **exact number** has an infinite number of significant figures.

3. A **zero** is significant when it is between nonzero digits, at the end of a number that includes a decimal point, before the first nonzero digits, and a trailing zero in a number without a decimal point.

Significant Figures in Calculated Results:

- for **addition and subtraction**, the number of significant figures can be found by visual inspection.

- for **products and quotients**, the answer should be rounded so that it contains the same number of significant figures as the original number with the smallest number of significant figures.

- in a **logarithm** of a number, keep as many digits to the right of the decimal point as there are significant figures in the original number.

- in a **antilogarithm** of a number, the result should have the same number of significant figures as the number of significant decimal places in the original number.

Stoichiometry and Concentration

Mole Ratio - indicated by coefficients in a balanced equation.

Chemical Reaction - process in which one or more substances is changed into one or more new substances.

Chemical Equation - uses chemical symbols to show what happens during a chemical reaction.

Evaluation of Analytical Data

Mean - arithmetic mean or average.

Median - middle value of a sample of results arranged in order of increasing/decreasing magnitude.

- The **median is used advantageously when a set of data contains an outlier**. An outlier can have a significant effect on the mean but lesser on the median.

Mode - value that occurs most frequently in a set of determinations.

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