

Significant Figures

In recording measurements, an indication of the accuracy attained is the number of digits (significant figures) recorded.

By definition, the number of significant figures in any measured value includes the positive (certain) digits plus one (only one) digit that is estimated or rounded off, and therefore questionable.

Any properly recorded measurement can be presumed to have a maximum uncertainty of plus or minus half its last digit.

To be consistent with the theory of errors, it is essential that data be recorded with the correct number of significant figures. If a significant figure is dropped off in recording a value, the time spent in acquiring certain precision has been wasted. On the other hand, if data are recorded with more figures than those that are significant, false precision will be implied and time may be wasted in making computations.

Two sig.fig: 24, 2.4, 0.24, 0.0024, 0.020

Three sig fig: 364, 36.4, 0.000364, 0.0240

Four sig fig: 7621, 76.21, 0.0007621, 24.00

In multiplication, the number of significant figures in the answer is equal to the least number of significant figures in any of the factors.

$$362.56 \times 2.13 = 772.2528$$

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