Tutorial – How to prepare a table

Preparing a table

Here is an example of a proper table for your physics labs:

Table 1 - A cart moving at constant velocity

Time, t (s) ± 0.2	Distance, d (mm)×10³ ± 5%
1.0	12.8 ± 0.6
2.0	17.0 ± 0.9
3.0	17.7 ± 0.9
4.0	20 ± 1
5.0	24 ± 1
6.0	25 ± 1
7.0	26 ± 1
8.0	30 ± 1
9.0	33 ± 2
10.0	35 ± 2

Comments on *Table 1*:

- Each table must be numbered chronologically and have a relevant title.

- Each column should have a header section:

  First line: A description and/or a symbol of the presented quantity should appear in the header.

  Second line: Units should be indicated in the column header and never in the body of the table.

  When comparing experimental and accepted values it can be convenient to have a multiplier to represent values that are different by several orders of magnitudes in order to keep certain units. If this is the case, this factor should be indicated in the column header beside the units as shown in the second column.

  Third line: If the uncertainty is constant throughout the column it should be indicated in column header as in the first column.

  If the absolute uncertainty varies, it should be written beside the measurements as shown in the second column. Note that since the relative uncertainty for the second column is constant (± 5%), we also include it in the header.

- The number of significant digits in a measurement is limited by the precision of the instrument. The uncertainty can only have ONE significant digit. A measurement can therefore only have as much decimal places as the uncertainty associated with the measurement. For example, (25.052 ± 0.25)m and (25.05 ±

0.25)m are both wrong. The correct way to express this measurement is (25.1 ± 0.3)m.

- The following table presents how the measurements in the second column were calculated from the raw data. It starts with the raw data in the first column and explains the steps to follow in order to obtain the column to present in _Table 1_. At the end of the manipulation of the raw data, the uncertainty should always have only ONE significant digit while the presented measurement can never have a higher precision than its associated uncertainty.

Table 2 - From raw data with constant relative uncertainty to values presented in the second column of _Table 1_

Raw data	$\Rightarrow$ **Step 1:**		$\Rightarrow$ **Step 2:**	$\Rightarrow$ **Step 3:**
Distance Measurements ±5%	Multiply measurements by 5%	After multiplying by 5%	Round off uncertainties to **ONE** significant digit	In order to have a consistent degree of precision between the measurements and their associated uncertainties, round off the measurements to the same decimal place as their associated uncertainties
12.80	12.80 ± (0.05 × 12.80)	12.80 ± 0.64	12.80 ± 0.6	12.8 ± 0.6
17.00	17.00 ± (0.05 × 17.00)	17.00 ± 0.85	17.00 ± 0.9	17.0 ± 0.9
17.70	17.70 ± (0.05 × 17.70)	17.70 ± 0.885	17.70 ± 0.9	17.7 ± 0.9
20.15	20.15 ± (0.05 × 20.15)	20.15 ± 1.0075	20.15 ± 1	20 ± 1
24.00	24.00 ± (0.05 × 24.00)	24.00 ± 1.2	24.00 ± 1	24 ± 1
25.05	25.05 ± (0.05 × 25.05)	25.05 ± 1.2525	25.05 ± 1	25 ± 1
26.00	26.00 ± (0.05 × 26.00)	26.00 ± 1.3	26.00 ± 1	26 ± 1
29.95	29.95 ± (0.05 × 29.95)	29.95 ± 1.4975	29.95 ± 1	30 ± 1
33.00	33.00 ± (0.05 × 33.00)	33.00 ± 1.65	33.00 ± 2	33 ± 2
34.85	34.85 ± (0.05 × 34.85)	34.85 ± 1.7425	34.85 ± 2	35 ± 2