Absolute Error

The magnitude of the difference between the individual measurement and the true value of the quantity is called the absolute error of the measurement.

This is denoted by $|\Delta a|$.

The errors in the individual measurement values from the true value, are

$$\Delta a_1 = a_1 - a_{mean},$$

$$\Delta a_2 = a_2 - a_{mean},$$

$$.... ....$$

$$.... ....$$

$$\Delta a_n = a_n - a_{mean}$$

The Δa calculated above may be positive in certain cases and negative in some other cases. But absolute error $|\Delta a|$ will always be positive.

Mean Absolute Error

The arithmetic mean of all the absolute errors is taken as the final or mean absolute error of the value of the physical quantity a.

It is represented by