Physical Quantity.

A quantity which can be measured and by which various physical happenings can be explained and expressed in form of laws is called a physical quantity. For example length, mass, time, force etc.

On the other hand various happenings in life e.g., happiness, sorrow etc. are not physical quantities because these cannot be measured.

Measurement is necessary to determine magnitude of a physical quantity, to compare two similar physical quantities and to prove physical laws or equations.

A physical quantity is represented completely by its magnitude and unit. For example, 10 meter means a length which is ten times the unit of length 1 kg. Here 10 represents the numerical value of the given quantity and meter represents the unit of quantity under consideration. Thus in expressing a physical quantity we choose a unit and then find that how many times that unit is contained in the given physical quantity, i.e.

Physical quantity (Q) = Magnitude × Unit = n × u

Where, n represents the numerical value and u represents the unit. Thus while expressing definite amount of physical quantity, it is clear that as the unit (u) changes, the magnitude (n) will also change but product 'nu' will remain same.

i.e. n u = constant, or $n_1 u_1 = n_2 u_2 = \text{constant}$; $\therefore n \propto \frac{1}{u}$

i.e. magnitude of a physical quantity and units are inversely proportional to each other .Larger the unit, smaller will be the magnitude.