

= Metric system =

The metric system is an internationally agreed decimal system of measurement . It was originally based on the mètre des Archives and the kilogramme des Archives introduced by the First French Republic in 1799 , but over the years the definitions of the metre and the kilogram have been refined , and the metric system has been extended to incorporate many more units . Although a number of variants of the metric system emerged in the late nineteenth and early twentieth centuries , the term is now often used as a synonym for " SI " or the " International System of Units " ? the official system of measurement in almost every country in the world .

The metric system has been officially sanctioned for use in the United States since 1866 , but the US remains the only industrialised country that has not adopted the metric system as its official system of measurement . Many sources also cite Liberia and Myanmar as the only other countries not to have done so . Although the United Kingdom uses the metric system for most administrative and trade purposes , Imperial units are widely used by the public and are permitted or obligatory for some purposes , such as road signs .

Although the originators intended to devise a system that was equally accessible to all , it proved necessary to use prototype units in the custody of national or local authorities as standards . Control of the prototype units of measure was maintained by the French government until 1875 , when it was passed to an intergovernmental organisation , the General Conference on Weights and Measures (CGPM) .

From its beginning , the main features of the metric system were the standard set of interrelated base units and a standard set of prefixes in powers of ten . These base units are used to derive larger and smaller units that could replace a huge number of other units of measure in existence . Although the system was first developed for commercial use , the development of coherent units of measure made it particularly suitable for science and engineering .

The uncoordinated use of the metric system by different scientific and engineering disciplines , particularly in the late 19th century , resulted in different choices of base units even though all were based on the same definitions of the metre and the kilogram . During the 20th century , efforts were made to rationalise these units , and in 1960 , the CGPM published the International System of Units , which has since then been the internationally recognised standard metric system .

= = Features = =

Although the metric system has changed and developed since its inception , its basic concepts have hardly changed . Designed for transnational use , it consisted of a basic set of units of measurement , now known as base units . Derived units were built up from the base units using logical rather than empirical relationships while multiples and submultiples of both base and derived units were decimal @-@ based and identified by a standard set of prefixes .

= = = Universality = = =

At the outbreak of the French Revolution in 1789 , most countries and even some cities had their own system of measurement . Although different countries might have used units of measure with the same name , such as the foot , or local language equivalents such as pied , Fuß and voet , there was no consistency in the magnitude of those units , nor in the relationships with their multiples and submultiples , much like the modern @-@ day differences between the US and the UK pints and gallons .

The metric system was designed to be universal ? in the words of the French philosopher Marquis de Condorcet it was to be " for all people for all time " . It was designed for ordinary people , for engineers who worked in human @-@ related measurements and for astronomers and physicists who worked with numbers both small and large , hence the huge range of the prefixes that have been defined in SI .

When the French Government first investigated the idea of overhauling their system of

measurement , the concept of universality was put into practice in 1789 : Maurice de Talleyrand , acting on Condorcet 's advice , invited John Riggs Miller , a British parliamentarian and Thomas Jefferson , the American Secretary of State to George Washington , to work with the French in producing an international standard by promoting legislation in their respective legislative bodies . However , these early overtures failed and the custody of the metric system remained in the hands of the French government until 1875 .

In languages where the distinction is made , unit names are common nouns (i.e. not proper nouns) . They use the character set and follow the grammatical rules of the language concerned , for example " kilometre " , " kilómetro " , but each unit has a symbol that is independent of language , for example " km " for " kilometre " , " V " for " volts " etc .

= = = Decimal multiples = = =

In the metric system , multiples and submultiples of units follow a decimal pattern , a concept identified as a possibility in 1586 by Simon Stevin , the Flemish mathematician who had introduced decimal fractions into Europe . This is done at the cost of losing the simplicity associated with many traditional systems of units where division by 3 does not result in awkward fractions ; for example one third of a foot is four inches , a simplicity that in 1790 was debated , but rejected by the originators of the metric system . In 1854 , in the introduction to the proceedings of the [British] Decimal Association , the mathematician Augustus de Morgan summarised the advantages of a decimal @-@ based system over a non @-@ decimal system thus : " In the simple rules of arithmetic , we practice a pure decimal system , nowhere interrupted by the entrance of any other system : from column to column we never carry anything but tens " .

A common set of decimal @-@ based prefixes that have the effect of multiplication or division by an integer power of ten can be applied to units which are themselves too large or too small for practical use . The concept of using consistent classical (Latin or Greek) names for the prefixes was first proposed in a report by the [French Revolutionary] Commission on Weights and Measures in May 1793 . The prefix kilo , for example , is used to multiply the unit by 1000 , and the prefix milli is to indicate a one @-@ thousandth part of the unit . Thus the kilogram and kilometre are a thousand grams and metres respectively , and a milligram and millimetre are one thousandth of a gram and metre respectively . These relations can be written symbolically as :