metric terms for large and small numbers

overview

Metric prefix expressions like **mega** and **giga** are used throughout the world to refer to large numbers. The metric prefixes of the *International System of Units (SI)*, routinely used to describe decimal (base 10) multiples and submultiples of metric units, can also serve as a practical scheme for the description of both large and small numbers.

Some metric prefixes have already been used as a way of communicating large numbers for which customary expressions, like 'billion', are subject to regional meanings of different magnitude. A metric alternative to customary expressions can however avoid the ambiguity about what magnitude might have been used.

The expression 'gigadollars' (G$) has appeared in the *Wall Street Journal*. Expressions of kilodollars (for example, 100 k) are routinely used in Australia and the United States. In France, economists have used the expressions 'kF' (kilofrancs) and 'MF' (megafrancs).

Following are guidelines used by Alliance for the Advancement of Technology for writing and for communicating both large and small numbers in terms of metric prefixes. Spelling follows *American English* and *AAT ICAS* usage. Pronunciations are not specified.

mtable 3107.3—metric terms for large numbers

prefix	short	numeric	note	ordinal
deka	da	dekaeon	1×10^1 multiple (10). like customary term 'ten'.	dekaeonth
hecto	h	hectoeon	1×10^2 multiple (100). like customary term 'hundred'	hectoeonth
kilo	k	kiloeon	1×10^3 multiple (1000). like customary term 'thousand'.	kiloeonth
mega	M	megaeon	1×10^6 multiple (1 000 000). like customary term 'million'.	megaeonth
giga	G	gigaeon	1×10^9 multiple (1 000 000 000). like American customary term 'billion'.	gigaeonth
tera	T	teraeon	1×10^{12} multiple (1 000 000 000 000). like British customary term 'billion', or American customary term 'trillion'.	teraeonth
peta	P	petaeon	1×10^{15} multiple (1 000 000 000 000 000).	petaeonth
exa	E	exaeon	1×10^{18} multiple (1 000 000 000 000 000 000).	exaeonth
zetta	Z	zettaeon	1×10^{21} multiple (1 000 000 000 000 000 000 000).	zettaeonth
yotta	Y	yottaeon	1×10^{24} multiple (1 000 000 000 000 000 000 000 000).	yottaeonth

mtable 3107.4—metric terms for small numbers

prefix	short	numeric	note	ordinal
deci	d	~	1×10^{-1} submultiple (0.1).	decienth
centi	c	~	1×10^{-2} submultiple (0.01).	centienth
milli	m	~	1×10^{-3} submultiple (0.001).	millienth
toko	to	~	1×10^{-4} submultiple (0.000 1).	tokoenth
tiko	ti	~	1×10^{-5} submultiple (0.000 01).	tikoenth
micro	μ	~	1×10^{-6} submultiple (0.000 001).	microenth
nano	n	~	1×10^{-9} submultiple (0.000 000 001).	nanoenth
pico	p	~	1×10^{-12} submultiple (0.000 000 000 001).	picoenth
femto	f	~	1×10^{-15} submultiple (0.000 000 000 000 001).	femtoenth
atto	a	~	1×10^{-18} submultiple (0.000 000 000 000 000 001).	attoenth
zepto	z	~	1×10^{-21} submultiple (0.000 000 000 000 000 000 001).	zeptoenth
yocto	y	~	1×10^{-24} submultiple (0.000 000 000 000 000 000 000 001).	yoctoenth
			~ (names for fractions are stated with the ordinal term expressions)	

usage

For most numbers the names for counting are the same for both the customary and metric sets of terms. For example the names for 0 through 9 are the same.

However for those numerical expressions that are derived from metric prefixes, like 'kiloeon' and 'megeaon', the metric terms can stand fluently and coherently for customary expressions like 'thousand' and 'million'. Even the term 'hectoeon' can stand fluently and coherently for the customary expression 'hundred'.

However, the term 'dekaeon' for a 'number group of ten' might not sound as fluent for counting as the term 'ten'. Other possible metric alternatives for a counting name for the number 10 remain under consideration. If however a choice of term is sufficiently established and there is no incoherence, then the name of a particular number, such as 'ten', can also be left customary.

mtable 3107.5—counting names for numbers

customary	metric
one	one
two	two
three	three
four	four
five	five
six	six
seven	seven
eight	eight
nine	nine
ten	metric alternatives remain under consideration: 'deka', 'deks', 'daes', or 'ten'
hundred	hectoeon
thousand	kiloeon
ten-thousand	ten-kiloeon
hundred-thousand	hundred-kiloeon
million	megaeon
!	gigaeon
!	teraeon

To avoid confusion from the mixing of metric prefixes, the customary terms 'ten' and 'hundred' are used in the metric scheme of usage to coordinate decimal numbers between the prefix values. Thus the expression 'ten-kiloeon' follows correct usage, while the expression 'deka-kiloeon' is incorrect.

references

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