

the units physics agreed on, how many digits an answer may keep, and what dimensions can prove

A unit is a reference standard, chosen not discovered

- physics is a science of measurement, and a measurement is a comparison with an agreed standard, so the number alone means nothing without its unit
- a good standard is invariable, reproducible anywhere, imperishable and convenient in size, which is why no physical artefact is used any more
- four systems appear in this course : CGS, FPS, MKS and MKSA, which adds the ampere to MKS
- SI is MKSA extended to seven base units, and it is the only system an answer should be written in unless the question says otherwise

The seven SI base units, and the two supplementary ones

Quantity	Unit	Symbol
length	metre	m
mass	kilogram	kg
time	second	s
electric current	ampere	A
thermodynamic temperature	kelvin	K
amount of substance	mole	mol
luminous intensity	candela	cd
plane angle (supplementary)	radian	rad
solid angle (supplementary)	steradian	sr

the set of seven was settled by the General Conference on Weights and Measures in 1971, when the mole was added; both supplementary units are dimensionless

The four systems side by side *

System	Length	Mass	Time	Current
CGS	centimetre	gram	second	not included
FPS	foot	pound	second	not included
MKS	metre	kilogram	second	not included
MKSA / SI	metre	kilogram	second	ampere

only MKSA carries an electrical base unit, which is why SI grew out of it and not out of CGS