PHYSICS

Prefixes for Units

OCR Physics A Specification H556

M0.1 Learners may be tested on their ability to convert between units with different prefixes

M0.2 Learner may be tested on their ability to use constants express in standard form

In Physics, we will be dealing with very small values (e.g. the charge of a single electron) and very large values (e.g. the mass of a galaxy).

To accommodate the huge range of numerical values we encounter, physicists and engineers use prefixes, which symbolise the powers of ten the value needs to be multiplied by to give the full number represented.

Prefix	Symbol	Powers of Ten
femto	f	10^{-15}
pico	p	10^{-12}
nano	n	10^{-9}
micro	μ	10^{-6}
milli	m	10^{-3}
centi	c	10^{-2}
kilo	k	10^{3}
mega	M	10^{6}
giga	G	10^{9}
tera	T	10^{12}

e.g.
Wavelength of red light = 650 nm = 650 x 10^{-9} m = 6.50 x 10^{-7} m
Output power of Sizewell B Nuclear Reactor = 1.19 MW = 1.19 x 10^{6} W

Useful video

	Vt. Physics Unit Prefixes Link

Task

Solve the following:

1. How many metres in 2.4 km?

2. How many joules in 8.1 MJ?

3. Convert 326 GW into W.

4. Convert 54600 mm into m.

5. How many grams in 240 kg?

6. Convert 0.18 nm into m.

7. Convert 632 nm into m. Express in standard form.

8. Convert 1002 mV into V. Express in standard form.

9. How many eV in 0.511 MeV? Express in standard form.

10. How many m in 11 km? Express in standard form.