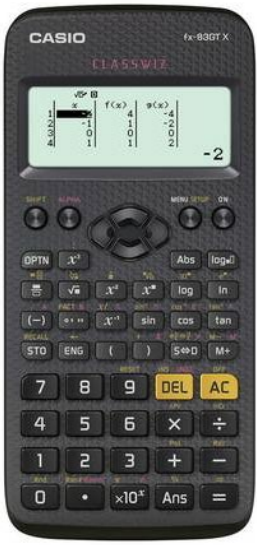
Prefixes and Conversions

Name	Symbol	Factor	To convert to standard units:
Tera	T	10^{12}	× by 1,000,000,000,000
Giga	G	10^{9}	× by 1,000,000,000
Mega	M	10^{6}	× by 1,000,000
kilo	k	10^{3}	× by 1,000
centi	c	10^{-2}	÷ by 100
milli	m	10^{-3}	÷ by 1,000
micro	μ	10^{-6}	÷ by 1,000,000
nano	n	10^{-9}	÷ by 1,000,000,000



Convert these quantities (use a calculator if you can to be sure or to check your answer)

1. A car travels on a journey of **35 km**, convert this into m?	
2. Why might an electrical engineer use a microammeter? What is 63 μA in amps?	
3. An average blood cell is **8.2 μm**, what is this coverted to m?	
4. An industrial press can have upwards of **140 MN**, how many Newtons is this?	
5. In a renewable power station **28.65 GW** of electricity was generated. How many Watts is this?	
6. An average mars bar contains **1020 kJ** of energy, how many Joules is this?	
7. What is the **standard (SI) unit of mass**? *Why* is this unusual?	
8. An orange has a mass of **30 g**, what is this in it's standard unit?	
9. A pen spring is said to have about **7.2 mJ** of elastic potential energy. How many Joules is this?	
10. A spring in a machine is compressed **3.5 cm**, what is this in it's standard unit?	
11. The atom is approximately **0.1 nm**, what is this in it's standard unit?	
12. The escape velocity of the Earth (the speed at which a rocket needs to leave the Earth) is **11.2 km/s**. How many **meters per second** is this?	
13. How many meters are there in **500 mm**?	
14. A computer hard drive is **1.5 TB** of memory, how many bytes is this?	
15. The same computer has a **2 GHz** processor, how many processes can it do *every second*?	
16. *BBC Radio 1* has an analogue frequency of **97.9 MHz**. How many oscillations are there in the electromagnetic field per second?	
17. What unit should ***time*** always be given in?	
18. How many standard units of time are there in **5 minutes**?	
19. How many standard units of time are there in **half an hour**?	

Highlight the prefix in these past paper questions and convert. Tick the quantities that are OK to use straight away:

0 4 . 6 The heating element has a power of 2.5 kW

The resistance of the heating element is 17 Ω

0 5 . 2 At midday 35.4 GW of electricity was generated.

20.8% of this was provided by gas-fired power plants.

0 5 . 4 To heat the house, the boiler transfers 15 MJ of energy in 10 minutes.

Calculate the power of the boiler.

0 6 . 3 Calculate the charge that flows through the cell in 1 minute.

Each filament lamp has a power of 3 W and a resistance of 12 Ω

0 2 . 2 The air contained water that froze at 0 °C

The change in internal energy of the water as it froze was 0.70 kJ

The specific latent heat of fusion of water is 330 kJ/kg

0 4 . 3 The length of the wire in the magnetic field is 0.050 m

The force on the wire is 0.072 N

magnetic flux density = 360 mT