NUMBER SYSTEMS AND PREFIXES

IS A CAPITAL M THE SAME AS A SMALL M?

PREFIX	SYMBOL	MULTIPLIER	MEANS	EXAMPLE
Tera	T	$\times 10^{12}$	trillion	
Giga	G	$\times 10^{9}$	thousand million	1 GW = 1,000,000,000 W
Mega	M	$\times 10^{6}$	million	1 MΩ = 1,000,000 Ω
Kilo	k	$\times 10^{3}$	thousand	2 kW = 2000 W
base unit: V, A, Ω, W				
milli	m	$\times 10^{-3}$	thousandth	30 mA = 0.030 A
micro	μ	$\times 10^{-6}$	millionth	1 μA = 0.000001 A
nano	n	$\times 10^{-9}$	thousand-millionth	
pico	p	$\times 10^{-12}$	trillionth	

This is **engineering notation**: electricians work in **powers of 3**, so each step is **×1000**. Moving to a **bigger** prefix makes the number smaller, and moving to a **smaller** prefix makes it bigger.

- **Positive power** (10^{6}): the zeros go *before* the decimal point, so it's a big number.
  Negative power (10^{-6}): the zeros go *after* the decimal point, so it's a tiny number.
- **Capital M = mega** (million) and **small m = milli** (thousandth). Mixing them up is a big mistake.
- You'll see **MΩ** when insulation resistance testing, and **Ω** when continuity testing.

CONVERSIONS

```
8.4 kW   in watts      → 8400 W
100 mA   in amps       → 0.1 A
0.03 A   in milliamps  → 30 mA
0.5 MΩ   in kilo-ohms  → 500 kΩ
80 mA    in amps       → 0.08 A  (= 80 × 10⁻³)
```

Calculator

Use the `×10ˣ` key. For 80 mA, type `80 ×10ˣ -3`. Also, 30 mA is the trip rating of an RCD, so you'll see that number a lot.

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