

**Metric prefixes**  
(~~Memorize these for the exam!~~)

	Prefix	Symbol	Exponent
Larger than base unit →	tera	1 T ___*	= 10 <sup>12</sup> ___*
	giga	1 G ___	= 10 <sup>9</sup> ___
	mega	1 M ___	= 10 <sup>6</sup> ___
	kilo	1 k ___	= 10 <sup>3</sup> ___
Smaller than ← base unit	deci	1 d ___	= 10 <sup>-1</sup> ___
	centi	1 c ___	= 10 <sup>-2</sup> ___
	milli	1 m ___	= 10 <sup>-3</sup> ___
	micro	1 μ ___	= 10 <sup>-6</sup> ___
	nano	1 n ___	= 10 <sup>-9</sup> ___
	pico	1 p ___	= 10 <sup>-12</sup> ___
	femto	1 f ___	= 10 <sup>-15</sup> ___

\* These blanks can be filled with any unit. **Important metric units include: gram (g), meter (m), liter (L), second (s).**

For example, if we need to convert between Gm ↔ m, we can start with:

$$1 \text{ G } \_\_\_ = 10^9 \_\_\_$$

Filling in the unit gives: 1 Gm = 10<sup>9</sup> m

This equality can then be used to make useful conversion factors:

$$\frac{1 \text{ Gm}}{10^9 \text{ m}} \quad \text{or} \quad \frac{10^9 \text{ m}}{1 \text{ Gm}}$$

**Some useful conversion factors**

(Don't memorize these; they'll be provided on exams!)

Length	Volume
1 m = 39.37 in. = 1.094 yd	1 L = 1000 cm <sup>3</sup> = 1.057 qt
1 in. = 2.54 cm (exactly, ∞ sf)	1 gal = 4 qt = 8 pt = 128 fluid ounces = 3.785 L
1 mile = 5280 ft = 1.609 km	
3 ft = 1 yd	

Mass	Energy and Temperature
1 kg = 2.205 lb	1 cal = 4.184 J (exactly, ∞ sf)
1 lb = 16 oz = 453.6 g	1 Cal = 1000 cal = 1 kcal = 1 "nutritional calorie"
1 ton = 2000 lb	
1 g = 6.022 x 10 <sup>23</sup> amu	°C = (°F - 32)/1.8 (∞ sf on 32 and 1.8)
	K = °C + 273.15