



Government of **Western Australia**
School Curriculum and Standards Authority



INTEGRATED SCIENCE

STAGE 3

FORMULAE AND DATA SHEET 2013

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This document is valid for teaching and examining until 31 December 2013.

Work	$W = Fs ; W = \Delta E$
Potential energy	$E_p = mgh$
Kinetic energy	$E_k = \frac{1}{2} mv^2$
Power	$P = \frac{W}{t}$
Electrical power	$P = VI = I^2R$
Efficiency	$\text{efficiency} = \frac{\text{energy out}}{\text{energy in}} \times 100\%$

Percentage composition by mass for ore A_yB_z

$$\% \text{ A in ore} = \frac{y \times \text{atomic weight of A}}{(y \times \text{atomic weight of A}) + (z \times \text{atomic weight of B})} \times 100$$

$$\% \text{ B in ore} = \frac{z \times \text{atomic weight of B}}{(y \times \text{atomic weight of A}) + (z \times \text{atomic weight of B})} \times 100$$

Relevant units and definitions

Volume:	Volumes are given in the units of litres (L), or millilitres (mL).
Energy change:	Energy changes are given in the SI unit joule (J).
Population density:	Number of an individual species living in a particular place at a particular time per unit area.
Electricity cost:	Cost = rated power of appliance \times duration of use \times cost per unit of electricity. Cost = units of electricity used \times cost per unit of electricity.

Prefixes of the metric system

Factor	Prefix	Symbol
10^{18}	exa	E
10^{15}	peta	P
10^{12}	tera	T
10^9	giga	G
10^6	mega	M
10^3	kilo	k
10^{-3}	milli	m
10^{-6}	micro	μ

Standard atomic weights of selected elements

Name	Symbol	Atomic Weight
aluminium	Al	26.98
antimony	Sb	121.76
carbon	C	12.01
copper	Cu	63.55
gold	Au	196.97
hydrogen	H	1.008
iron	Fe	55.85
lead	Pb	207.2
nickel	Ni	58.69
oxygen	O	16.00
silicon	Si	28.09
sulfur	S	32.07
titanium	Ti	47.87
zinc	Zn	65.41
zirconium	Zr	91.22