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

WACE
Western Australian Certificate of Education

INTEGRATED SCIENCE

STAGE 3

FORMULAE AND DATA SHEET
2012

This document is valid for teaching and examining until 31 December 2012.

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 × duration of use × cost per unit of electricity.
Cost = units of electricity used × 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