



Trial Examination 2009

## **VCE Physics Unit 2**

Written Examination

### **Data Sheet**

#### **Directions to students**

Detach this data sheet before commencing the examination.  
This data sheet is provided for your reference.

**MOTION**

1	velocity; acceleration	$v = \frac{\Delta x}{\Delta t}$ $a = \frac{\Delta v}{\Delta t}$
2	equations for constant acceleration	$v = u + at$ $x = ut + \frac{1}{2}at^2$ $v^2 = u^2 + 2ax$ $x = \frac{1}{2}(v + u)t$
3	Newton's second law	$F = ma$
4	gravitational potential energy near the surface of the Earth	$mgh$
5	kinetic energy	$\frac{1}{2}mv^2$
6	mechanical work	$W = Fx$
7	power	$P = \frac{W}{\Delta t} = \frac{\Delta E}{\Delta t}$
8	acceleration due to gravity	$g = 10 \text{ m s}^{-2}$

**LIGHT**

Snell's law	$n_1 \sin \theta_1 = n_2 \sin \theta_2$
universal wave equation	$v = f\lambda$
frequency and period	$f = \frac{1}{T}$
refractive index	$n = \frac{\text{speed of light in vacuum}}{\text{speed of light in the medium}}$
mass-energy equation	$E = mc^2$

**ASTROPHYSICS**

speed of light in vacuum	$c = 3.0 \times 10^8 \text{ m s}^{-1}$
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**ALTERNATIVE ENERGY SOURCES**

$\text{Efficiency (\%)} = \frac{\text{Useful energy output}}{\text{Energy input}} \times 100$
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**PREFIXES**

Prefix	Abbreviation	Value
giga	G	$10^9$
mega	M	$10^6$
kilo	k	$10^3$
milli	m	$10^{-3}$
micro	$\mu$	$10^{-6}$
nano	n	$10^{-9}$

**END OF DATA SHEET**