COMBINED PHYSICS PAPER 1 (H) 2023: EQUATIONS SUMMARY

	$\times 10^3$	x 1,000		$\times 10^{-3}$	÷ 1,000
	$\times 10^6$	x 1,000,000		$\times 10^{-6}$	÷ 1,000,000
	$\times 10^9$	x 1,000,000,000		$\times 10^{-9}$	÷ 1,000,000,000

1. Write down the equation that links gravitational potential energy (E_p), mass (m), gravitational field strength (g) and height (h):			
Give the units for each variable:	Give the other re-arrangements for the equation:		
E_p →			
m →			
g →			
h →			

2. Write down the equation that links charge flow (Q), current (I) and time (t):		
Give the units for each variable:	Give the other re-arrangements for the equation:	
Q →		
I →		
t →		

3. Write down the equation that links kinetic energy (E_k), mass (m) and speed (v):		
Give the units for each variable:	Give the other re-arrangements for the equation:	
E_k →		
m →		
v →		

4. Write down the equation that links power (P), potential difference (V) and current (I):	

Give the units for each variable:	Give the other re-arrangements for the equation:	
P →		
V →		
I →		

5. Write down the equation that links potential difference (V), current (I) and resistance (R):	

Give the units for each variable:	Give the other re-arrangements for the equation:	
V →		
I →		
R →		

6. Write down the equation that links elastic potential energy (E_e), spring constant (k) and extension (e):	

Give the units for each variable:	Give the other re-arrangements for the equation:	
E_e →		
k →		
e →		

7. Write down the equation that links change in thermal energy (ΔE), mass (m), specific heat capacity (c) and temperature change (ΔΘ):	

Give the units for each variable:	Give the other re-arrangements for the equation:		
ΔE →			
m →			
c →			
ΔΘ →			

8. Write down the equation that links density (ρ), mass (m) and volume (V):		
Give the units for each variable:	Give the other re-arrangements for the equation:	
ρ →		
m →		

9. Write down the equation that links efficiency, useful power output and total power input:		
Give the units for each variable:	Give the other re-arrangements for the equation:	
Efficiency →		
Useful power output →		
Total power input →		

10. Write down the equation that links power (P), energy transferred (E) and time (t):		
Give the units for each variable:	Give the other re-arrangements for the equation:	
P →		
E →		
t →		

11. Write down the equation that links power (P), current (I) and resistance (R):		
Give the units for each variable:	Give the other re-arrangements for the equation:	
P →		
I →		
R →		

12. Write down the equation that links thermal energy for a change of state (E), mass (m) and specific latent heat (L):		
Give the units for each variable:	Give the other re-arrangements for the equation:	
E →		
m →		
L →		

13. Write down the equation that links efficiency, useful energy output and total energy input:		
Give the units for each variable:	Give the other re-arrangements for the equation:	
Efficiency →		
Useful energy output →		
Total energy input →		

14. Write down the equation that links energy transferred (E), charge (Q) and potential difference (V):		
Give the units for each variable:	Give the other re-arrangements for the equation:	
E →		
Q →		
V →		

15. Write down the equation that links power (P), work done (W) and time (t):		
Give the units for each variable:	Give the other re-arrangements for the equation:	
P →		
W →		
t →		