|  |  |  |
| --- | --- | --- |
| W = m g |  | W = weight (N)m = mass (kg)g = gravitational field strength (N/kg) |
| mgW |  |

weight = mass x gravitational field strength

|  |  |  |
| --- | --- | --- |
| W = F s |  | W = work done (J)F = force (N)s = distance (m) |
| FsW |  |

Work done = force x distance (along the line of action of the force)

|  |  |  |
| --- | --- | --- |
| F = k e |  | F = force (N)k = constant (N/m)e = extension (m) |
| keF |  |

Force applied to a spring = spring constant x extension

|  |  |  |
| --- | --- | --- |
| s = v t |  | s = distance travelled (m)v = speed (m/s)t = time (s) |
| vts |  |

Distance travelled = speed x time

|  |  |  |
| --- | --- | --- |
| a = ∆v t |  | a = acceleration (m/s2)∆v = change in velocity (m/s)t = time taken (s) |
| at∆v |  |

Acceleration = change in velocity

 Time taken

|  |  |  |
| --- | --- | --- |
| F = m a |  | F = force (N)m = mass (kg)a = acceleration (m/s2) |
| maF |  |

Resultant force = mass x acceleration

|  |  |  |
| --- | --- | --- |
| p = m v |  | p = momentum (kg m/s)m = mass (kg)v = velocity (m/s) |
| mvp |  |

Momentum = mass x velocity

|  |  |  |
| --- | --- | --- |
| Ek = ½ m v2 |  | Ek = kinetic energy (J)m = mass (kg)v2 = (speed) 2 (m/s) |
| Ek |  |

v2

m

½

Kinetic energy = 0.5 x mass x speed

|  |  |  |
| --- | --- | --- |
| Ep = m g h |  | Ep = gravitational potential energy (J)m = mass (kg)g = gravitational field strength (N/kg)h = height (m) |
| hgmEp |  |

Gravitational potential energy = mass x gravitational field strength x height

|  |  |  |
| --- | --- | --- |
| P = $\frac{E}{t}$  |  | P = power (kWh)E = energy transferred (kw)t = time (h) |
| PtE |  |

Power = energy transferred

 time

|  |  |  |
| --- | --- | --- |
| P = $\frac{W}{t}$  |  | P = power (W)W = work done (J)t = time (s) |
| PtE |  |

Power = work done

 time

|  |  |  |
| --- | --- | --- |
|  |  | Efficiency (%)Total output energy transfer (J)Total input energy transfer (J) |
|  |  |

Efficiency = total output energy transfer

 total input energy transfer

|  |  |  |
| --- | --- | --- |
|  |  | Efficiency (%)Useful power output (J)total power output (J) |
|  |  |

Efficiency = useful power output

 total power output

|  |  |  |
| --- | --- | --- |
| v = f Image result for lamda | Image result for lamda | v = wave speed (m/s)f = frequency (hz) = wavelength (m) |
| fImage result for lamdav |  |

Wave speed = frequency x wavelength

|  |  |  |
| --- | --- | --- |
| Q = I t |  | Q = charge flow (C)I = current (A)t = time (s) |
| ItQ |  |

Charge flow = current x time

|  |  |  |
| --- | --- | --- |
| V = I R |  | V = potential difference (v)I = current (A)R = resistance (Ω) |
| IRV |  |

Potential difference = current x resistance

|  |  |  |
| --- | --- | --- |
| P = V I |  | P = power (W)V = potential difference (V)I = resistance (A) |
| VIP |  |

Power = potential difference x current

|  |  |  |
| --- | --- | --- |
| P = I2 R |  | P = power (W)I2 = potential difference (V)R = resistance (A) |
| mgW |  |

Power = (current)2 x resistance

|  |  |  |
| --- | --- | --- |
| E = P t |  | E = energy transferred (kWh)P = power (W)t = time (h) |
| PtE |  |

Energy transferred = power x time

|  |  |  |
| --- | --- | --- |
| E = Q V |  | E = energy transferred (J) Q = charge flow (C)V = potential difference (V) |
| mgW |  |

Energy transferred = charge flow x potential difference

|  |  |  |
| --- | --- | --- |
| p = $\frac{m}{V}$ |  | p = density (kg/m3)m = mass (kg)V = volume (m3) |
| mgW |  |

Density = mass

 volume