

### Energy

$$KE = \frac{1}{2}mv^2$$

$$F = \Delta p / \Delta t$$

$$\Delta GPE = mg\Delta h$$

$$W = Fd = \Delta E$$

$$W = Fd$$

$$(\%) \text{ efficiency} = (\text{useful energy output} / \text{total energy input}) \times 100\%$$

$$(\%) \text{ efficiency} = (\text{useful power output} / \text{total power input}) \times 100\%$$

$$P = W / t$$

$$P = \Delta E / t$$

$$p = F / A$$

$$\Delta p = \rho g \Delta h$$

$$T (\text{in K}) = \theta (\text{in } ^\circ\text{C}) + 273$$

$$pV = \text{constant}$$

$$c = \Delta E / m\Delta\theta$$

### Forces

$$\Delta p = \rho g \Delta h \text{ (liquid pressure)}$$

$$\text{Pressure} = \text{force} / \text{area}$$

$$W = m \times g$$

$$KE = \frac{1}{2}mv^2$$

$$a = v - u / t$$

$$R.F = F.F - B.F$$

$$R.F \text{ or } F = m \times a$$

$$R.F \text{ or } F = m \times a = m \times (v - u / t) = mv - mu / t = \text{change in momentum} / t$$

$$F = \Delta \text{ momentum} \text{ or } P / \Delta t$$

$$\text{impulse} = R.F \text{ or } F \times \Delta t$$

$$\text{impulse} = \text{change in momentum} / \text{change in time}$$

$$m_1u_1 + m_2u_2 = m_1v_1 + m_2v_2 \text{ (conservation of momentum)}$$

$$m_1u_1 + m_2u_2 = (m_1 + m_2) \times V \text{ (when objects stick together)}$$

### Thermal physics

$$KE = \frac{1}{2}mv^2$$

$$F = \Delta p / \Delta t$$

$$p \text{ is inversely proportional to } V$$

$$W = Fd = \Delta E$$

$$p_1v_1 = p_2v_2$$

$$c = \Delta E / m\Delta\theta$$

$$\text{specific heat capacity} = \text{change in thermal energy} / \text{mass} \times \text{change in temperature}$$

$$P = \Delta E / t$$

$$p = F / A$$

$$\Delta p = \rho g \Delta h$$

$$T (\text{in K}) = \theta (\text{in } ^\circ\text{C}) + 273$$

$$pV = \text{constant}$$

$$c = \Delta E / m\Delta\theta$$

### waves

$$v = f \lambda$$

$$n = \sin i / \sin r$$

$$n = 1 / \sin c$$

### Motion

$$\text{Density} = \text{Mass} / \text{Volume}$$

$$(\text{constant}) S = \text{distance} / \text{time}$$

$$a = v - u / t$$

$$D \text{ (while accelerating)} = v + u \times t$$

$$D = \text{area under the graph}$$

$$W = m \times g$$

$$R.F / F = m \times a$$

$$R.F = F.F - B.F$$

$$\text{Moment} = \text{force} \times \text{perpendicular distance from the pivot}$$

$$\text{Pressure} = \text{force} / \text{area}$$

$$(\text{Liquid}) \text{ pressure} = \text{Density} \times g \times \text{height}$$

$$X = \text{new } L - \text{original } L$$

$$F = k/x$$

