BRITISH COLUMBIA | Ministry of Education

Physics 12 Formulae Sheet

Vector Kinetics 2D

$v = v_0 + at$

$v^2 = v_0^2 + 2ad$

$\overline{v} = \frac{v + v_0}{2}$

$d = v_0 t + \frac{1}{2} a t^2$

Vector Dynamics 2D

$F_{net} = ma$

$F_{fr} = \mu F_N$

$F_g = mg$

Momentum and Energy 2D

$W = Fd$

$E_k = \frac{1}{2} m v^2$

$p = mv$

$E_p = mgh$

$P = \frac{w}{\Delta t}$

$\Delta p = F_{net} \Delta t$

Equilibrium

$\tau = Fl$

$\sum T_{cw} = \sum T_{ccw}$

$F_1 l_1 = F_2 l_2$

Circular Motion

$T = \frac{1}{f}$

$F_c = ma_c$

$W - N = ma_c$

$\frac{T_1^2}{R_1^3} = \frac{T_2^2}{R_2^3}$

$a_c = \frac{v^2}{r} = \frac{4\pi^2 r}{T^2}$

$F_g = G \frac{m_1 m_2}{r_2}$

$E_p = -G \frac{m_1 m_2}{r}$

Electrostatics

$$F = k\frac{Q_1 Q_2}{r_2}$$

$$E = \frac{F}{Q}$$

$$E = k\frac{Q}{r^2}$$

$$\Delta v = \frac{\Delta E_p}{Q}$$

$$E = \frac{\Delta v}{d}$$

$$E_p = k\frac{Q_1 Q_2}{r}$$

$$V = k\frac{Q}{r}$$

Electromagnetism

$$F = BIl$$

$$F = QvB$$

$$B = \mu_0 nI = \mu_0 \frac{N}{l} I$$

$$\varepsilon = Blv$$

$$\phi = BA$$

$$\varepsilon = -N\frac{\Delta\phi}{\Delta t}$$

$$V_{back} = \varepsilon - Ir$$

$$\frac{V_s}{V_p} = \frac{N_s}{N_p} = \frac{l_p}{l_s}$$