

DCPS Equation List for Honors Physics 1

$$v_f = v_i + at$$

$$d = v_i t + \frac{1}{2}at^2$$

$$v_f^2 = v_i^2 + 2ad$$

$$d = \frac{1}{2}(v_i + v_f)t$$

$$\sum F = F_{net} = ma$$

$$F_c = \frac{mv^2}{r}$$

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

$$PE = mgh$$

$$W = Fd$$

$$\text{net work} = \Delta KE$$

$$p = mv$$

$$F\Delta t = m\Delta v$$

$$P = \frac{W}{t}$$

$$F = G \left(\frac{m_1 m_2}{d^2} \right)$$

$$v = f\lambda$$

$$T = 2\pi \sqrt{\frac{L}{g}}$$

$$T = 2\pi \sqrt{\frac{m}{k}}$$

$$F = k \left(\frac{q_1 q_2}{d^2} \right)$$

$$V = IR$$

$$R_T = R_1 + R_2 + R_3$$

$$\frac{1}{R_t} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

a = acceleration

d = displacement or distance

F = Force

f = frequency

g = acceleration due to gravity = 9.80 m/s²

G = universal gravitational constant = $6.67 \cdot 10^{-11} \frac{\text{N} \cdot \text{m}^2}{\text{kg}^2}$

h = height

I = current

KE = kinetic energy

k = spring constant

k = Coulomb's constant = $9.0 \cdot 10^9 \frac{\text{N} \cdot \text{m}^2}{\text{C}^2}$

L = length

m = mass

PE = gravitational potential energy

P = power

p = momentum

q = charge

r = radius

R_T = total or effective resistance

t = time

V = speed or velocity

W = work

$F = BIL$

$$\bar{v} = \frac{\Delta d}{\Delta t}$$

$$\bar{a} = \frac{\Delta v}{\Delta t}$$

$$F_g = mg$$

$$F_{AonB} = -F_{BonA}$$

$$F_{f_1} = \mu_k F_N$$

$$F_{f_1} \leq \mu_s F_N$$

$$a_c = \frac{v^2}{r}$$

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

$$F_{net} = ma_c$$

$$v_{a|b} + v_{b|c} = v_{a|c}$$

$$T = 2\pi \sqrt{\frac{r^3}{GM}}$$

$$\left(\frac{T_A}{T_B}\right)^2 = \left(\frac{r_A}{r_B}\right)^3$$

$$g = G \frac{M}{r^2}$$

$$v_t = \sqrt{G \frac{M}{r}}$$

$$q_e = 1.60 \times 10^{-19} C$$

$$\sum \mathbf{p}_i = \sum \mathbf{p}_f$$

$$W = F \Delta d \cos \theta$$

$$E = KE + PE$$

$$E_i = E_f$$

$$F = -kx$$

$$PE_{sp} = \frac{1}{2} kx^2$$

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

$$f_d = f_s \left(\frac{v \pm v_d}{v \pm v_s} \right)$$

$$\lambda = \frac{c}{f}$$

$$\frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i}$$

$$n_1 \sin \theta_1 = n_2 \sin \theta_2$$

$$\sin \theta_c = \frac{n_2}{n_1}$$

$$E = Pt$$

$$I = \frac{q}{t}$$

$$P = IV = I^2 R = \frac{V^2}{R}$$

$$E = mc^2$$