# Equation Sheet

$\rho_w = 1000\ kg/m^3$ Pressure = $p = \frac{F}{A}$ $\sigma = \frac{F}{A}$ $\sigma = Y\frac{L - L_0}{L}$ $p_h = \rho gh;$

$F/A = Y\,(L-L_0)/L_0$ $F/A = S\,(L-L_0)/L_0$ $\Delta P = B\,(V-V_0)/V_0$

1 atm = $1.013 \times 10^5$ Pa, $F_B = \rho gV$ $A_1v_1 = A_2v_2$ Av -volume flow rate, $g = 9.8\ m/s^2$

Mass flow rate $= A v \rho$

$p_1 + 1/2\rho v_1^2 + \rho gh_1 = p_2 + 1/2\rho v_2^2 + \rho gh_2$ flow in horizontal pipe: $p_1 + 1/2\rho v_1^2 = p_2 + 1/2\rho v_2^2$

$T(^0C) = \frac{5}{9}\,[T(^0F) - 32];$ $T(^0F) = \frac{9}{5}\,T(^0C) + 32;$ $T(K) = [T(^0C) + 273]$ $\Delta T_F = \Delta T_C$

$L - L_0 = \alpha L_0 (T-T_0);$ $A - A_0 = 2\alpha A_0 (T-T_0);$ $V - V_0 = \beta V_0 (T-T_0)$ $V - V_0 = 3\alpha V_0 (T-T_0)$

$\sigma = Y\alpha (T-T_0)$ $\rho = \frac{m}{V};$ $A_{circle} = \pi r^2$ 1 m = 100 cm $V_{cube} = a^3$ $V_{sphere} = \frac{4}{3}\pi R^3$

$V_{cyl} = \pi r^2 L$ 1m = 100 cm 1 kg = 1000 g

Kinetic Energy of moving object = ½ m $v^2$

Potential Energy near surface of earth = m g h, $g = 9.8\ m/s^2$

$Q = kA\frac{T_1 - T_2}{L}t$ $Q = kA\frac{T_1 - T_2}{\sum R_i}t$ R = L/k $\frac{Q}{t} = e\sigma A(T^4 - T_0^4)$ $\sigma = 5.67 \times 10^{-8}\ W/m^2K^4$