POSSIBLY USEFUL INFORMATION

Conversions and Constants:

1000 m = 1 km 100 cm = 1 m 1000 mm = 1 m 1 mL = 1 cm^3

1 Newton (N)= 1 $\frac{kg \cdot m}{s^2}$ 1 Joule (J) = 1 $N \cdot m$ 1 Watt (W) = 1 $\frac{J}{s}$

1 calorie = 4.186 J 1 Pascal = 1 $\frac{N}{m^2}$ 1 atm = 10^5 Pa

T(K) = T(°C) + 273 T(°F) = $\frac{9}{5}$ T(°C) + 32 1 Hz = 1 s^{-1}

$g = 10 \frac{m}{s^2}$ $v_{sound\ in\ air\ @\ room\ temperature} = 340\ \frac{m}{s}$ Δ = "change in…"

Density of water = 1.0 $\frac{g}{cm^3}$ Density of Alcohol = 0.82 $\frac{g}{cm^3}$

Specific Heat Capacity of water = 1.0 $\frac{cal}{g\ ^\circ C}$

Ice-Water Latent Heat = 80 $\frac{cal}{g}$ Water-Steam Latent Heat = 540 $\frac{cal}{g}$

Properties of Matter:

Solids / Liquids / Gases / Plasmas

(Mass) Density = $\frac{m}{V}$ Weight Density = $\frac{mg}{V}$ Hooke's law: $F = k\Delta x$

$P = \frac{F}{A}$ P = (Density of fluid) $\times g \times$ (Depth)

$P_1V_1 = P_2V_2$ F_{buoy} = (Density of fluid) $\times$ ($V_{submerged}$) $\times g$

Temperature, Heat & Thermodynamics:

Rate of Cooling/Warming $\propto \Delta T$ $Q = mc\Delta T$ $Q_{phase\ change} = mL_{phase}$

$\Delta L = L_0 \alpha \Delta T$ $\Delta E_{int} = Q - W$ $e = 1 - \frac{T_C}{T_H}$ Coef. of Perf. = $\frac{T_C}{T_H - T_C}$

Waves & Sound:

Frequency / Wave Speed / Resonance / Doppler Effect

$f = \frac{1}{T}$ $v_{wave} = \lambda f$ $f_{n,string} = nf_1$ $f_{new} = \left(\frac{v \pm v_o}{v \mp v_s} \right) f$