Some reference information:

$\gamma = (2/f) + 1$ $\quad$ $U = (f/2)\, n_m RT$

\# molecules hitting unit area of wall in unit time with speeds between v and v + dv and travelling at angles between θ and θ + dθ:

$v \cos\theta\, n\, f(v)\, dv\, \tfrac{1}{2} \sin\theta\, d\theta$

flux of molecules $\Phi = \tfrac{1}{4} n \langle v \rangle = p/(2\pi m k_B T)^{1/2}$

mean scattering time $\tau = 1/(n\, \sigma\, \langle v_{relative} \rangle)$ $\quad$ mean free path $\lambda \approx 1/[\sqrt{(2)}\, n\, \sigma]$

$\eta = \tfrac{1}{3} n\, m\, \lambda \langle v \rangle$ $\quad$ $\kappa = \tfrac{1}{3} C_V \lambda \langle v \rangle$ $\quad$ $D = \tfrac{1}{3} \lambda \langle v \rangle$

nucleon (proton or neutron) mass: 1.7×10^{-27} kg.

$R = 8.3$ J mole^{-1} K^{-1}

$\Delta S = -Nk_B[x \ln x + (1-x) \ln(1-x)]$

$dU = TdS - pdV = TdS + fdL = TdS + Bdm$

$dH = TdS + Vdp$ $\quad$ $dF = -SdT - pdV$ $\quad$ $dG = -SdT + Vdp$

$E_T = (\sigma/\varepsilon) = (L/A)(\partial f/\partial L)_T$

$\chi = \lim_{H\to 0} M/H \approx \mu_0 M/B$

$\Sigma_{n=0}^{N}\ x^n = (1 - x^{N+1})/(1\ \ x)$

$\Gamma(n+1) = n!$ (for integer n) ; $\Gamma(1/2) = \sqrt{\pi}$; $\Gamma(x+1) = x\,\Gamma(x)$

$dp/dT = L/(T\, \Delta V)$

$d\Phi_G = -SdT - pdV - Nd\mu$

$p = RT/(V-b) - a/V^2$

$\lambda_{th} = h/(2\pi m k_B T)^{1/2}$

$\tilde{g}(k)dk \sim L^d k^{d-1}\, dk$ so $g(E)dE = \tilde{g}(k(E))\, (dk/dE)\, dE$; $E \propto k^2$ (massive) or k (pho(t/n)ons)

$$\int^{\infty} \phi(E)\, f_{FD}(E) dE = \int_0^{E_F} \phi(E) dE + \frac{\pi^2}{6}(k_B T)^2 \left[\phi'(E_F) - \phi(E_F) \frac{g'(E_F)}{g(E_F)} \right]$$

$$\int_0^{\infty} \frac{E^{n-1} dE}{z^{-1} e^{\beta E} - 1} = (k_B T)^n\, \Gamma(n)\, Li_n(z)$$