1. $\mathcal{P}(E_i) = e^{-\beta E_i}$
    - $\mathcal{Z} = \sum_i \mathcal{P}(E_i)$
    - $\beta = \dfrac{1}{k_B T}$
2. $\langle O \rangle = \sum_i P_i \mathcal{O}_i$
3. $\langle E \rangle = -\frac{\partial}{\partial \beta} \ln \mathcal{Z}$