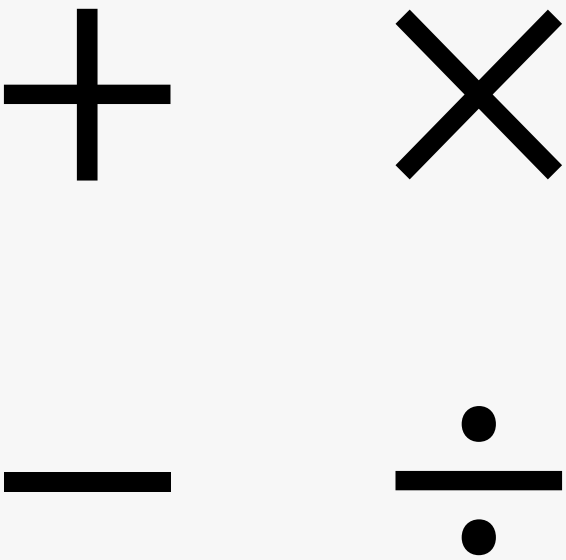
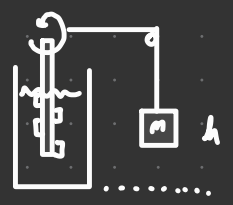


$$\Delta Q = mc\Delta T$$

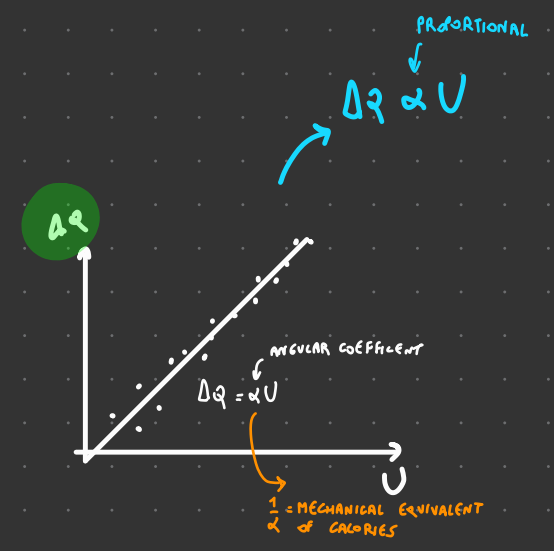
$$\sum_{i=1}^{N} \Delta Q_i = 0$$

JOULE'S EXP.



MECHANICAL ENERGY TO ROTATE AND INCREASE TEMP. OF LIQUID

$U = mgh$ → KINETIC ENERGY WHEN EVERYTHING STOPS THE ENERGY WENT IN THE WATER TEMPERATURE



UNITS $(\alpha) = \frac{J}{CAL}$

PHENOLOGICAL LAWS (1660 - 1810)

$$\frac{PV}{TN} = K_B$$

VOLUME

BOLTZMANN CONSTANT

↳ NUMBER OF MOLECULES (DIMENSIONLESS)

$T \propto PV$

Boltzmann constant = $1.380649 \times 10^{-23}\ m^2\ kg\ s^{-2}\ K^{-1}$ (J/K)

$[PV] = [E]$

SAME UNITS OF MEASUREMENT

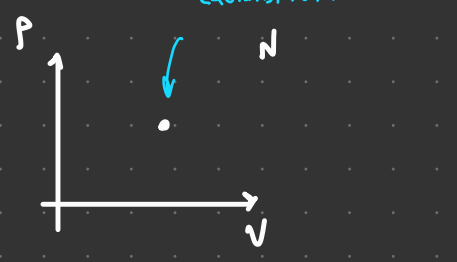
$$[K_B] = \frac{[E]}{[T]} = \frac{J}{K}$$ ✓ JOULE ✓ KELVIN

BEST THERMOMETER ⇒ GAS ONE
↳ SNOW & POINT USEFUL TO CLASSIFY

$$\boxed{T = T(p, v, N)}$$
EQ. OF STATE

THERMODYNAMIC EQUILIBRIUM
- STATE WITH WELL DEFINED THERMODYNAMIC VARIABLES ARE ALL CONSTANT

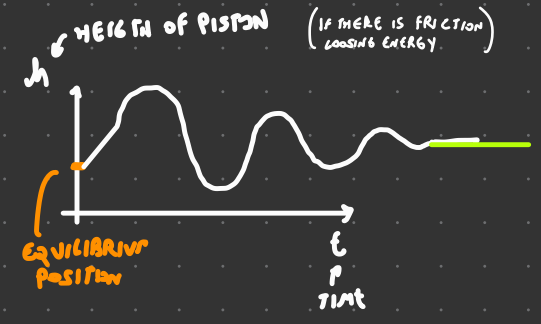
SYSTEM IN THERMODYNAMIC EQUILIBRIUM



NOT ALL SYSTEM ARE IN EQUILIBRIUM →

BALANCE THE PRESSURE OF THE GAS → MECHANICAL EQUILIBRIUM. THE FORCES BALANCE EACHOTHER

REMOVE 1 WEIGHT → $\vec{F}_1$ UPWARD ACCELERATION; $\vec{F}_B$



FOR CARGE TIME ON THE POSITION OF THE PYSTON IS FIXED (EQUILIBRIUM)

FORCE OF WEIGTHS = PRESSURE

QUASI-STATIC THERMODYNAMIC TRANSFORMATION
PASSES THROUGH EQUILIBRIUM STATES

C_W A_l

$T_{CW} > T_{Al}$

C_{CW} C_{Al} (I KNOW THOSE THINGS)

m_{CW} m_{Al}

T_{eq}?

$\Delta Q_{CW} + \Delta Q_{Al} = 0$

(SAME TEMP. (DEF. OF EQU.))

$$mC_W C_{CW}\left[T_{Eq} - T_{CW}\right] + m_{Al}C_{Al}\left(T_{Eq} - T_{Al}\right) = 0$$

$$T_{Eq} = \frac{m_{CW}C_{CW}T_{CW} + m_{Al}C_{Al}T_{Al}}{m_{CW}C_{CW} + m_{Al}C_{Al}}$$