

GPE & KE

- GPE

$$\text{GPE} = m \times g \times \Delta h$$

(J) (kg) (N/kg⁻¹) (m)

- KE

$$\text{KE} = \frac{1}{2} mv^2$$

- GPE ↔ KE

若在一运动中, GPE全部转换成KE

$$\Delta \text{GPE} = mg\Delta h = \frac{1}{2} mv^2 = \text{KE}$$

$$\text{则, } v = \sqrt{2g\Delta h} \quad \Delta h = \frac{v^2}{2g}$$

Work & power

● Work & Work done

Work : scalar

Work done : vector

$$\text{work done (J)} = F(N) \times \Delta s(\text{m})$$

$$W = Fs$$

● Power

def. the rate of energy transfer.

$$P = \frac{W}{t} = \frac{Fs}{t} = Fv$$

● Efficiency

$$\text{efficiency} = \frac{\text{energy output}}{\text{energy input}}$$