Method of Work & Energy 13.1 – 13.8
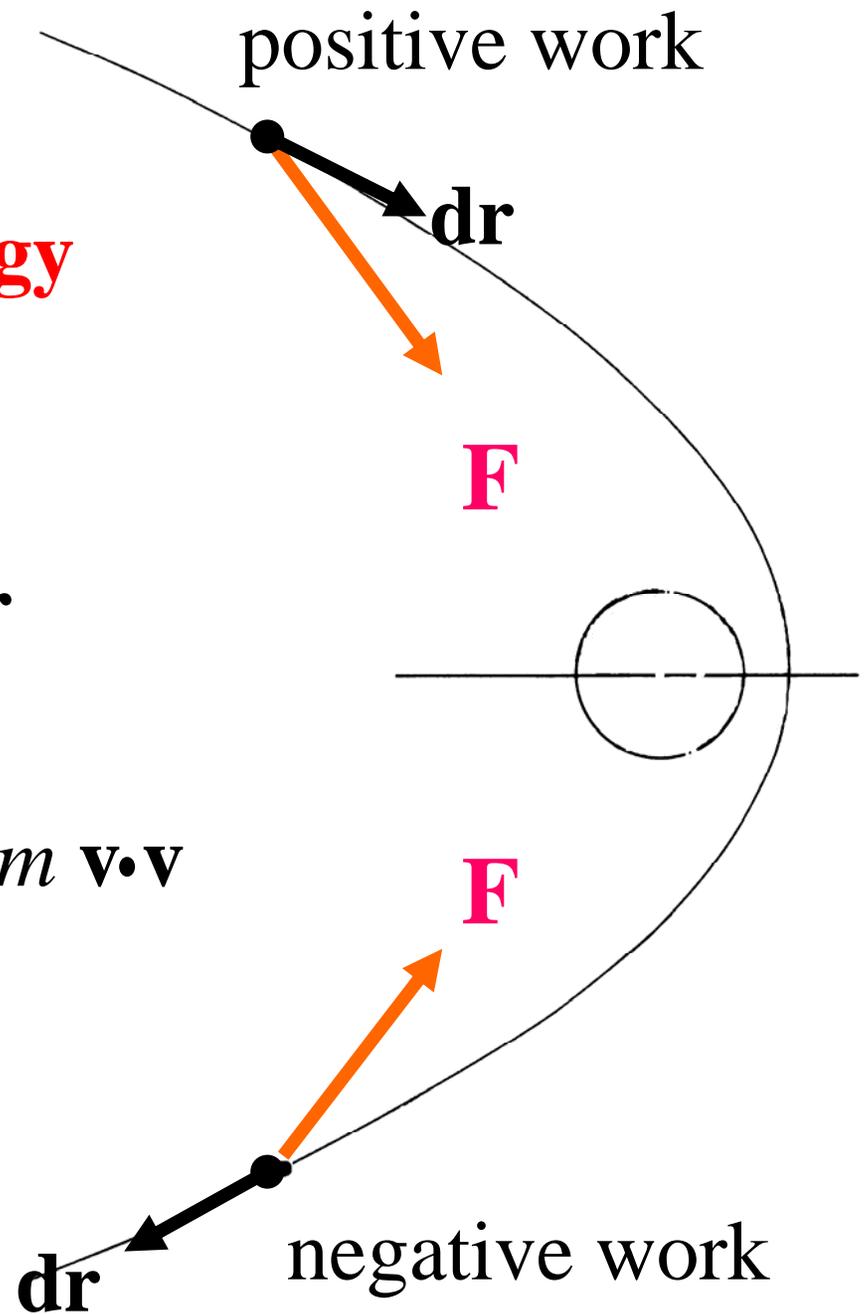
positive work

dr

F

Work: $\quad U_{1 \longrightarrow 2} = \displaystyle\int \mathbf{F} \cdot d\mathbf{r}$

F

Kinetic Energy: $\quad T = \dfrac{1}{2}\, m\, \mathbf{v} \cdot \mathbf{v}$

Energy Equation:

$$T_1 + U_{1 \longrightarrow 2} = T_2$$

dr negative work

Conservative F_c & Non-Conservative Forces F_n

Energy Equation:

$$\int_1^2 \mathbf{F_n} \cdot d\mathbf{r} = (T_2 + V_2) - (T_1 + V_1)$$

500 N

20 kg A

600 mm

C

B 10 kg

Energy Equation:

$$\int_1^2 \mathbf{F_n} \cdot d\mathbf{r} = \Delta T + \Delta V$$

$\Delta V > 0$ if V increases from positions 1 to 2

$\Delta T > 0$ if T increases from positions 1 to 2