SiQuENC: Work-energy theorem

Neatly and graphically represent situation(s)

Carefully read the problem three times.
For each situation, draw system and relevant aspects of environment.
use dashed bubble(s) to indicate object(s) in system.
indicate frame of reference, including, if applicable, where $h = 0$.
Identify requested unknowns.

Illustration of **initial** situation	Illustration of **final** situation

Graphically represent quantities and their relationships

Bar chart Initial energies and externally supplied work	**Bar chart** Final energies and change in internal energy

Identify relevant allowed starting point equation(s)

$$\overbrace{\Sigma KE_i + \Sigma U_{\mathrm{G},i} + \Sigma U_{\mathrm{S},i}}^{\Sigma ME_{\mathrm{SYS},i}} + \sum_{\substack{\mathrm{EXT} \\ \mathrm{ON\ SYS}}} \Delta W_{\mathrm{F}} = \overbrace{\Sigma KE_f + \Sigma U_{\mathrm{G},f} + \Sigma U_{\mathrm{S},f}}^{\Sigma ME_{\mathrm{SYS},f}} + \Sigma \Delta U_{\mathrm{INT}}$$

	Questions	Terms
1	Is there any moving object?	$KE_{\mathrm{PARTICLE}} = \frac{1}{2}mv^2$
2	Is there any object at a height different from the reference height?	$U_{\mathrm{G}} = mgh$ or $-G\frac{m_1 m_2}{r}$
3	Is there any distorted spring?	$U_{\mathrm{S}} = \frac{1}{2}k(\Delta x)^2$
4	Is any work done on the object(s) in the system by any force(s) of origin(s) external to the system?	$\sum_{\substack{\mathrm{EXT} \\ \mathrm{ON\ SYS}}} \Delta W_{\mathrm{F}}$
5	Were materials warmed, burned, metabolized, or otherwise chemically reacted?	ΔU_{INT}

Analyze (attach separate sheet)

Communicate