Physics 2A
Conservation of Energy
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**Step 1 – Diagrams:**
(a) Draw diagrams illustrating the initial and final situations
(b) Set the zero level for gravitational potential energy

**Step 2**
(a) **IF ALL FORCES ARE CONSERVATIVE:** Compute the $U_g$, $U_s$ and $K$ for both the initial situation and final situation.

(b) **IF NONCONSERVATIVE FORCES ACT:** Compute the $U_g$, $U_s$ and $K$ for both the initial situation and final situation AND compute the work done by all nonconservative forces.

**Step 3**
(a) **IF ALL FORCES ARE CONSERVATIVE:**
Write down the equation for conservation of mechanical energy:

\[ U_{gi} + U_{si} + K_i = U_{gf} + U_{sf} + K_f \]

Plug in your results from Step 2(a) and get cracking with the algebra.

(b) **IF NONCONSERVATIVE FORCES ACT:**
Write down the equation for conservation of energy:

\[ \Delta U_g + \Delta U_s + \Delta K = W_{nc} \]

Plug in your results from Step 2(b) and get cracking with the algebra.