

# \*\*\*Energy\*\*\*

- A mass is attached to a spring and set to motion. The maximum displacement is  $x=A$

- $\Sigma W_{nc} = \Delta K + \Delta U$

- $0 = \Delta K + \Delta U$  or Energy  $U+K$  is constant!

$$\text{Energy} = \frac{1}{2} k x^2 + \frac{1}{2} m v^2$$

- At maximum displacement  $x=A$ ,  $v = 0$

$$\text{Energy} = \frac{1}{2} k A^2 + 0$$

- At zero displacement  $x = 0$

$$\text{Energy} = 0 + \frac{1}{2} m v_m^2$$

Since Total Energy is same

$$\frac{1}{2} k A^2 = \frac{1}{2} m v_m^2$$

$$v_m = \text{sqrt}(k/m) A$$

