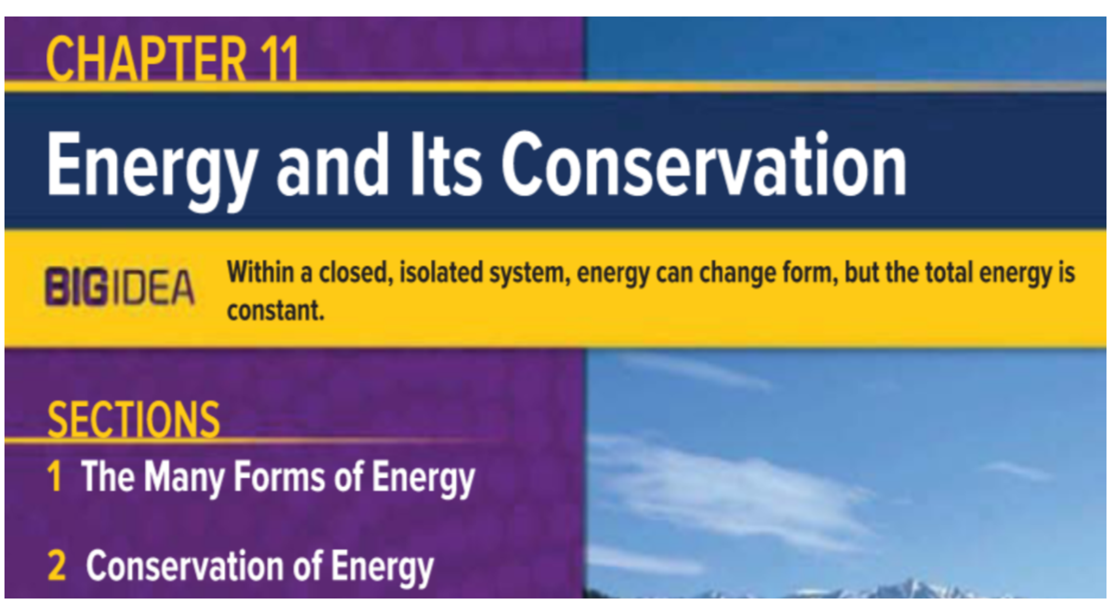


Forces that do not store energy are called nonconservative or dissipative forces.

Conservative: Gravitational Force, Elastic Force, Magnetic Force, Electrostatic Force.

Nonconservative: Friction Force, Applied or External Force, Tension, Normal

Theorem: Work and Kinetic Energy

$W = F \cdot \Delta X$

$F = m \cdot a$

$W = m \cdot a \cdot \Delta X$

$v^2 = v_0^2 + 2a\Delta X$

$\frac{v^2 - v_0^2}{2a} = \Delta X$

$W = m \cdot a \left(\frac{v^2 - v_0^2}{2a}\right)$

$W = \frac{1}{2}mv^2 - \frac{1}{2}mv_0^2$

$\frac{1}{2}mv^2 = K$ (Kinetic Energy)

$W = K - K_0$

$\boxed{W = \Delta K}$ work done by { Conservatives / None Conservative FORCES

Theorem: Work and Kinetic Energy

$W = F \cdot \Delta X$

$F = m \cdot a$

$W = m \cdot a \cdot \Delta X$

$v^2 = v_0^2 + 2a\Delta X$

$\frac{v^2 - v_0^2}{2a} = \Delta X$

$W = m \cdot a \left(\frac{v^2 - v_0^2}{2a}\right)$

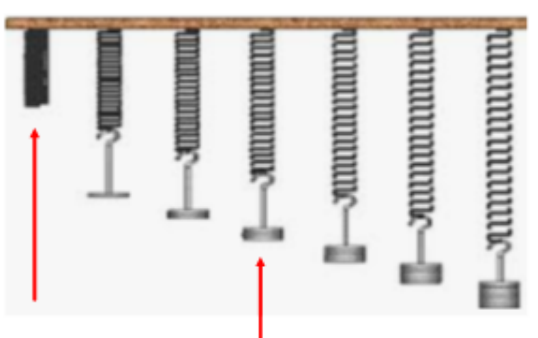
$W = \frac{1}{2}mv^2 - \frac{1}{2}mv_0^2$

$\frac{1}{2}mv^2 = K$ (Kinetic Energy)

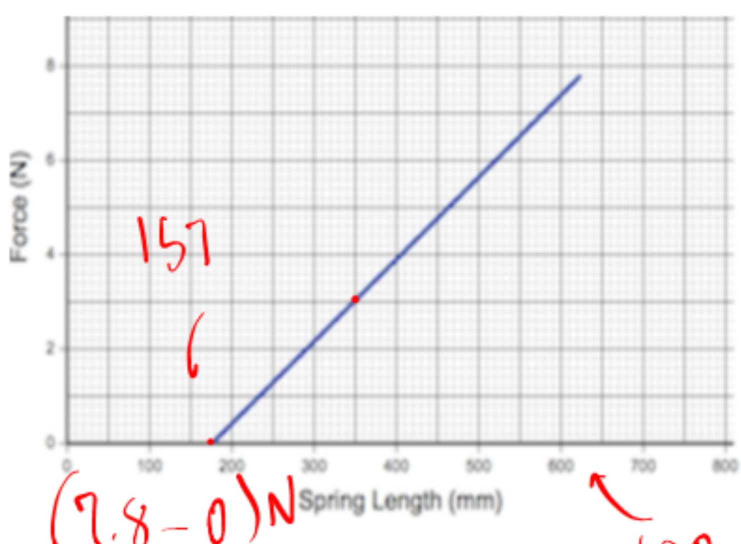
$W = K - K_0$

$\boxed{W = \Delta K}$ work done by { Conservatives / None Conservative FORCES

Work and Elastic Potential Energy



Spring Constant From Graph



$F_s = -KX$

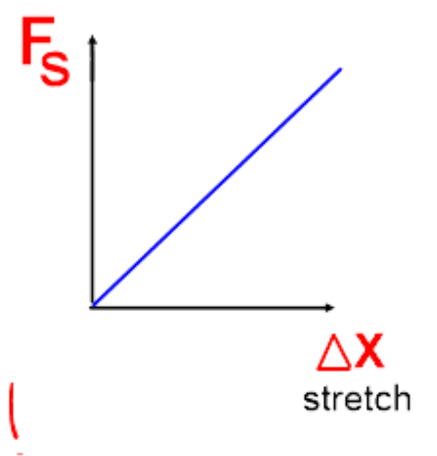
spring Force (or Elastic Force)

$K = \frac{\Delta F}{\Delta X} = \frac{(7.8 - 0)\,N}{(0.620 - 0.157)\,m}$

$K = 16.8\ \frac{N}{m}$

spring Constant

Work and Elastic Potential Energy



$W = F \cdot \Delta X \cdot \cos\theta$

$W_{F_s} = F_s \cdot \Delta X \cdot \cos(180°)$ −1

$W_{F_s} = -\frac{K \cdot \Delta X \cdot \Delta X}{2}$ Accel

$W_{F_s} = -\frac{K\Delta X^2}{2}$

$\boxed{W_{F_s} = -\Delta U_s}$

Hooke's Law Lab

F = K ΔX

F_s elastic force

the factor $\frac{kx^2}{2} = U_s$

Elastic Potential Energy !!

$W_{net} = W_c + W_{nc} = K$ ↔ $-\Delta U + W_{nc} = \Delta K$

$\left.\begin{array}{l} W_{Fg} = -\Delta U_g \\ W_{Fs} = -\Delta U_s \end{array}\right\} W_c = -\Delta U$

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

$E = K + U$

$\boxed{W_{nc} = \Delta E}$