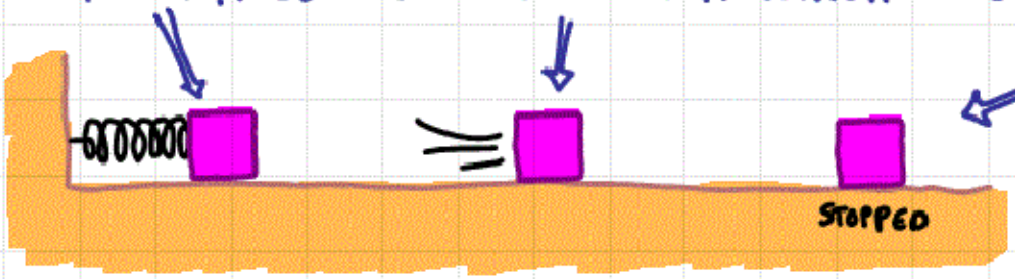
Conservation of Energy

Note Title 10/11/2011

Conservation of Energy

The amount of Energy in a system will always remain the same

HERE, SPRING ENERGY BECOMES KINETIC ENERGY WHICH BECOMES HEAT



$PE_s \rightarrow KE + heat \rightarrow heat$

The heat is a result of FRICTION. You can test this yourself by rubbing your hands together to warm them

We can represent this with the Work-Energy theorem

$$\Delta E = WORK = F_f \cdot d$$

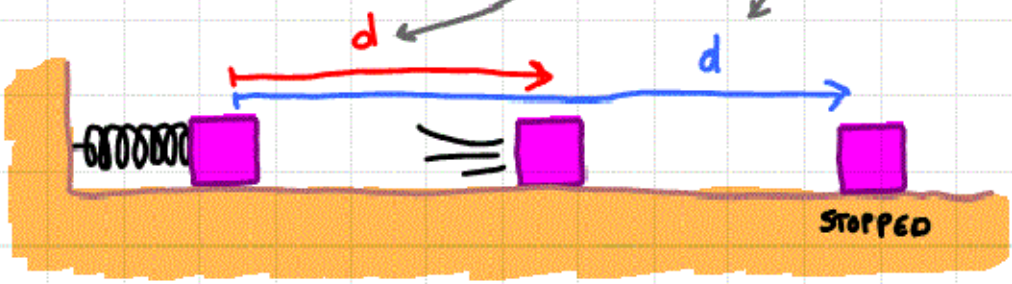
$F_f = \mu N$

how far friction has been applied

We will call heat "Q"

$$PE_s = KE + Q = Q$$

$$\frac{1}{2}Kx^2 = \frac{1}{2}mv^2 + F_f d = F_f d$$



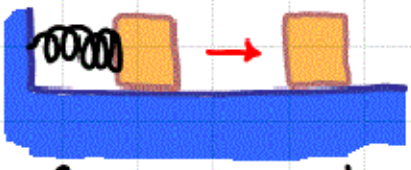
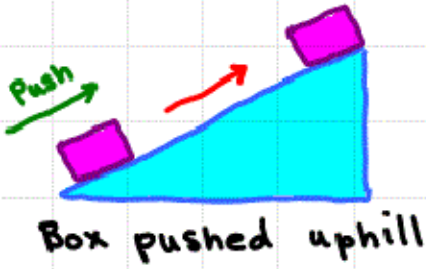
THE SUPER EQUATION

$$W + KE + PE_g + PE_s = KE + PE_g + PE_s + Q$$

the type of Energy that you start with

the type of Energy you END with

CROSS OUT ANY FORMS OF ENERGY THAT ARE ZERO

SITUATION	NO FRICTION	FRICTION
 Spring pushes box	$\cancel{W} + \cancel{KE} + \cancel{PE_g} + PE_s = KE + \cancel{PE_g} + \cancel{PE_s} + \cancel{Q}$ $PE_s = KE$	$PE_s = KE + Q$
 Car moving down track	$\cancel{W} + \cancel{KE} + PE_g + \cancel{PE_s} = KE + PE_g + \cancel{PE_s} + \cancel{Q}$ $PE_g = KE + PE_g$	$PE_g = KE + PE_g + Q$
 Box pushed uphill	$W + \cancel{KE} + \cancel{PE_g} + \cancel{PE_s} = \cancel{KE} + PE_g + \cancel{PE_s} + \cancel{Q}$ $W = PE_g$	$W = PE_g + Q$