

Phys171 - Mon 4/2

Return of Midterm 2 tomorrow

Similar average grade (after curving)

- if you improved - keep it up

- if your grade slipped:

 - practice the first step of problem solving:
how to set up equations from text

HW 12 DUE April 13

Third midterm Mon Apr 23 - in 3 weeks

Lowest grade quiz will not count!

Please email me if you need an extension on ONE HW assignment. I will give one away free...

Mechanical Energy

$$\Delta E_{\text{mech}} = \Delta K + \Delta U$$

$$W = \Delta E_{\text{mech}} + f_k d$$

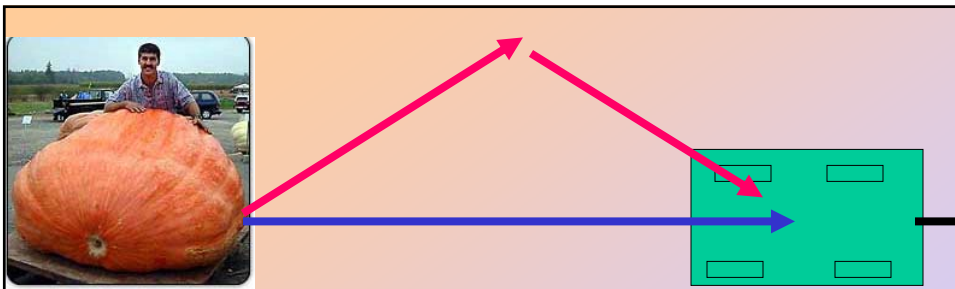
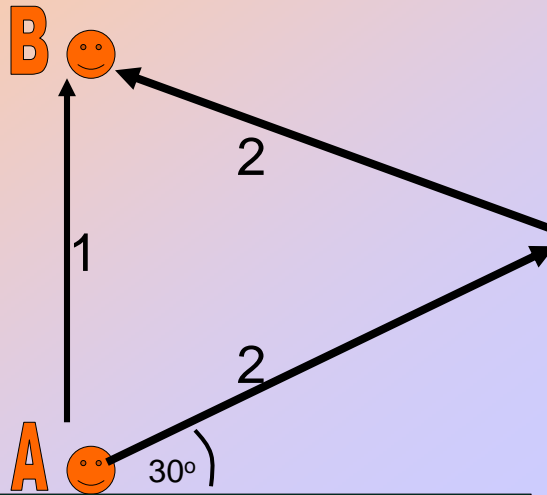
$$\rightarrow W = \Delta K + \Delta U + f_k d$$

ΔU is the change in all forms of potential energy

W is work done by a force from OUTSIDE the "system" i.e. a force for which we do not have a potential energy U included

The work needed to lift the pumpkin upward from A to B is

1. Larger for path 1
2. Larger for path 2
3. Independent of the path taken



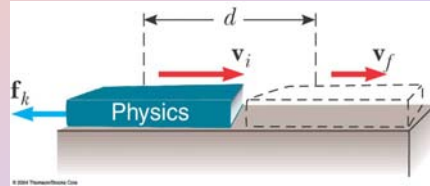
For the frictional force, compare the work needed to move the object from A to B along the blue or red path

1. More work needed on blue
2. More work needed on red
3. Same work needed on both since work is independent of path

Internal Energy

Energy associated with an object's temperature:
internal energy, E_{int}

Friction does work and increases the internal energy of the *object and surface*



Internal energy generally will **not** get converted back into useful work!

Nonconservative Forces

The work done against friction is greater along the red path than along the blue path

Because the work done depends on the path, friction is a nonconservative force

