Work and Kinetic Energy

Applying a force on an object through a certain displacement increases its **energy.** In this case, we say that **work** was performed <u>on</u> the object.

(Work = Force x Displacement)

Any moving object has some energy associated with its movement. We call this the **Kinetic Energy**.

"Change in kinetic energy is equal to the mechanical work done by all forces"

$$\Delta K = W$$

$K = \dfrac{m\, v^2}{2}$ ---> Kinetic Energy

$W = F\,\Delta x$ ---> Work

Homework

Problem 1. a) In cliff diving, people jump from a high cliff to the sea. Suppose that John falls down from a 30m tall cliff. Through his way down, gravity is doing work on John. Given that John has a mass of 70Kg, find the total work done by gravity on John. Neglect air resistance.

Hint: Recall that $W = F \Delta x$.

Problem 1. b) What speed will John have right before he touches the water, assuming he started his fall at rest (v=0 m/s)?

Hint 1: Recall that the change of kinetic energy K of an object is equal to the work W performed on the object.

Hint 2: Recall that the kinetic energy of an object is given by $K = \dfrac{m\,v^2}{2}$

John