Work and Kinetic Energy

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

$$\Delta K = W$$

(Work = Force x Displacement)

$K = \dfrac{mv^2}{2},$ is called Kinetic Energy of an object

$W = F\Delta x,$ is called Mechanical Work

Homework

Problem 1.

A cyclist is moving at a constant speed of 10 m/s on a flat road. There is an air resistance force acting on him which is F=100 Newtons, directed backwards (called air drag).

a) What is the total work done by the air drag force in 1 minute?
b) What is the work done by the bicyclist over the same time (assuming there are no other losses except of the air drag)?

Problem 2.

A driver in the car moving with speed 30 m/s applies breaks. Friction force acting on the car is 10kN. Mass of the car is 2000kg. Find the distance that the car will travel before coming to a complete stop.