Mechanical Work

Work = Force x Distance

$$W = Fd$$

Units of work are joules, same as for energy. 1 joule is the work done by force 1 newton over distance 1 meter.

$$1\mathrm{J} = 1\mathrm{N} \cdot 1\mathrm{m}$$

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

$$\Delta K = W$$

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).

What is the work done by the bicyclist over 1 minute (assuming there are no other losses except of the air drag)?

Problem 2.

How much work has to be done to accelerate a car from speed 0 m/s to 30 m/s? Mass of the car is 2000 kg.