

**ENERGY PROBLEMS**

Ex) An object slides across a horizontal table which changes its kinetic energy from 20 J to 18 J in 2 sec. How much work does the object do against friction?

\* **The Work Energy Relationship**

**The work done on or by a system = \_\_\_\_\_**

**W<sub>f</sub> - work done against friction**

Ex) A 10 kg frictionless cart is resting on a horizontal table. A force of 10 N is applied to the cart for a distance of 8 m. What is the cart's new kinetic energy?

Ex) 100 Joules of work is needed to lift a 100kg object from the ground. What is the object's new PE?

Ex) A crate is pulled 6m up an incline with a force of 50N. If the PE of the cart increases by 250 J. What is the total work done against friction in moving the box?

$$W = \Delta KE = \Delta PE + W_f$$

$$W = F \cdot d$$

Ex) 4 N force is exerted on a 1kg mass at rest causing it to move 2 m

A. Find the object's K.E.

B. Find the objects velocity

Ex) A force of 100N lifts the object 10m off the ground. What is the object's new potential energy?

What is the mass of the object?

Ex) A spring has a spring constant of 2 N/m. How much work must be done to stretch 5m from its equilibrium position?