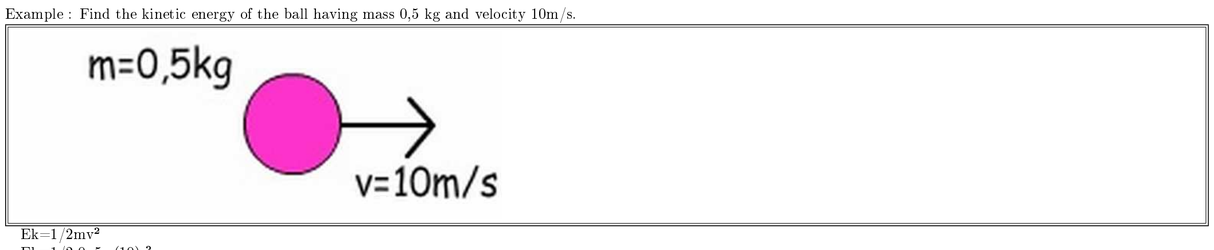
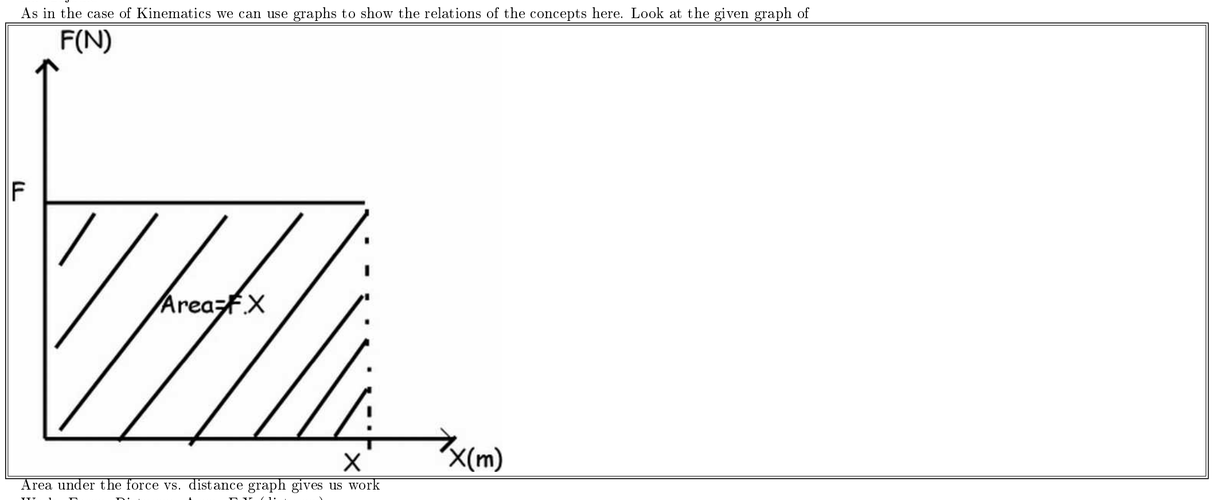
Force vs. Distance graph.

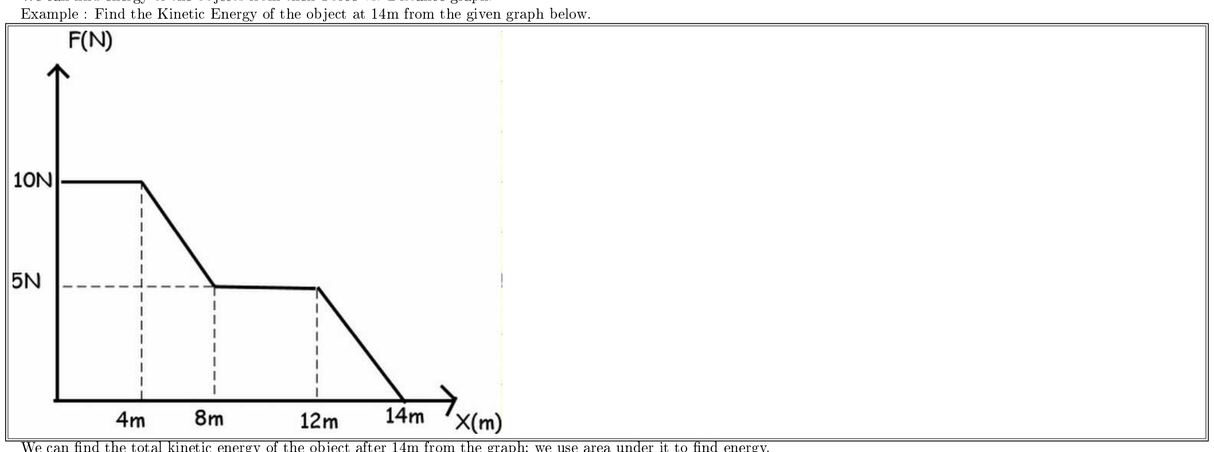
Example : Find the kinetic energy of the ball having mass 0,5 kg and velocity 10m/s.



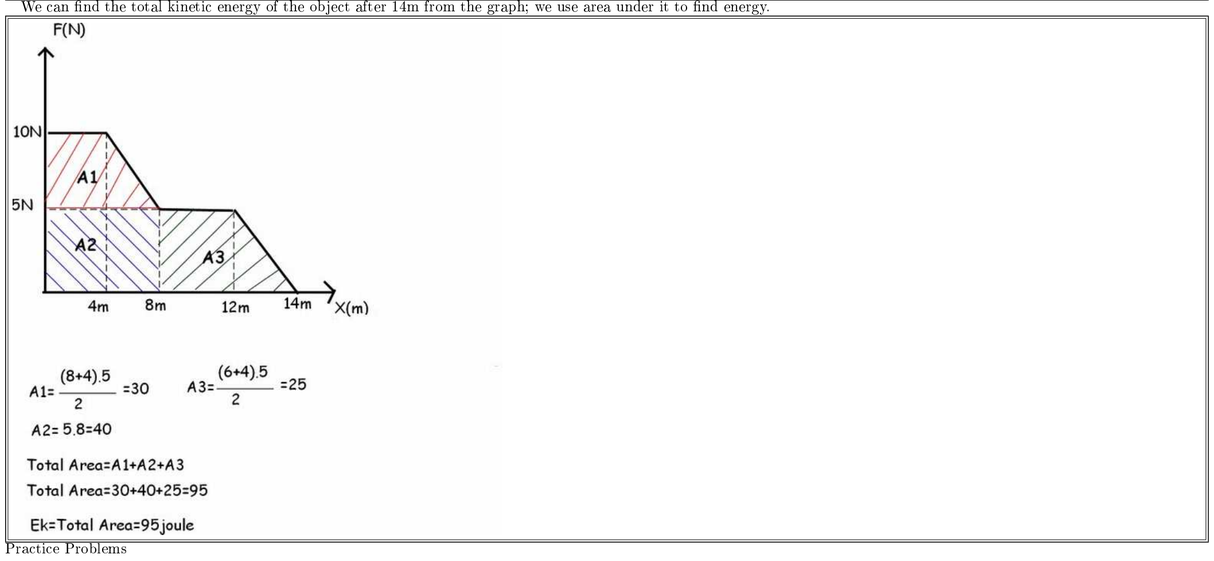
$Ek=1/2mv^2$
$Ek=1/2.0,5.\ (10)^2$
Ek=25joule
As in the case of Kinematics we can use graphs to show the relations of the concepts here. Look at the given graph of



Area under the force vs. distance graph gives us work
Work=Force. Distance=Area=F.X (distance)
We can find energy of the objects from their Force vs. Distance graph.
Example : Find the Kinetic Energy of the object at 14m from the given graph below.



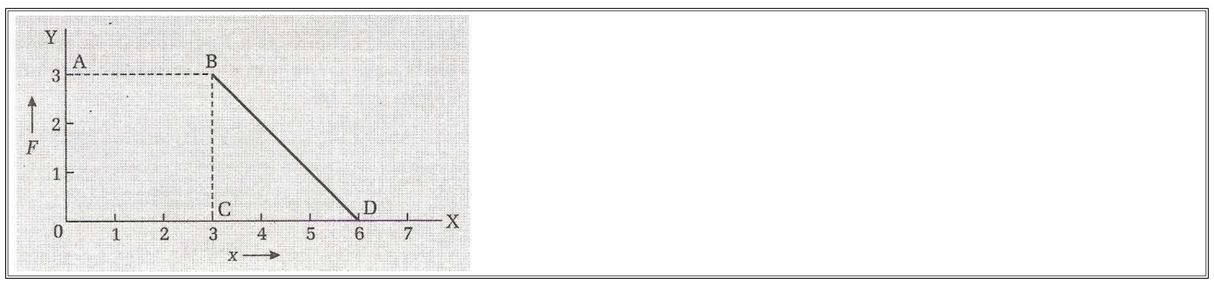
We can find the total kinetic energy of the object after 14m from the graph; we use area under it to find energy.



Practice Problems

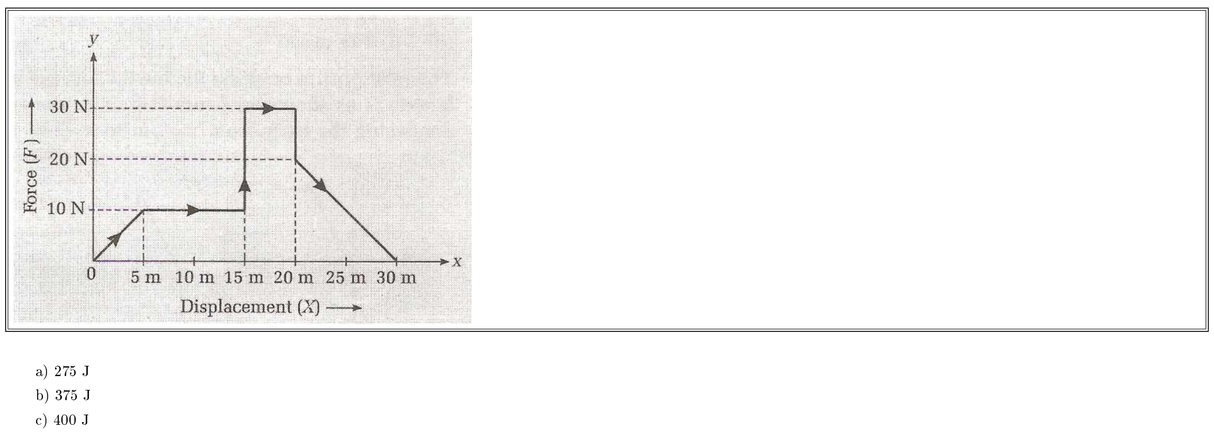
General Problem Set

Example : A force F acting on an object varies with distance x as shown in Figure. The force is in newton (N) and the distance (x) in metre. The work done by the force in moving from x=0 to x=6m is



a) 4.5 J
b) 9.0 J
c) 14.5 J
d) 15 J

Example : Given below is a graph between a variable force (F) (along y-axis) and the displacement (X) (along x-axis) of a particle in one dimension. The work done by the force in the displacement interval between 0 m and 30 m is



a) 275 J
b) 375 J
c) 400 J
d) 300 J