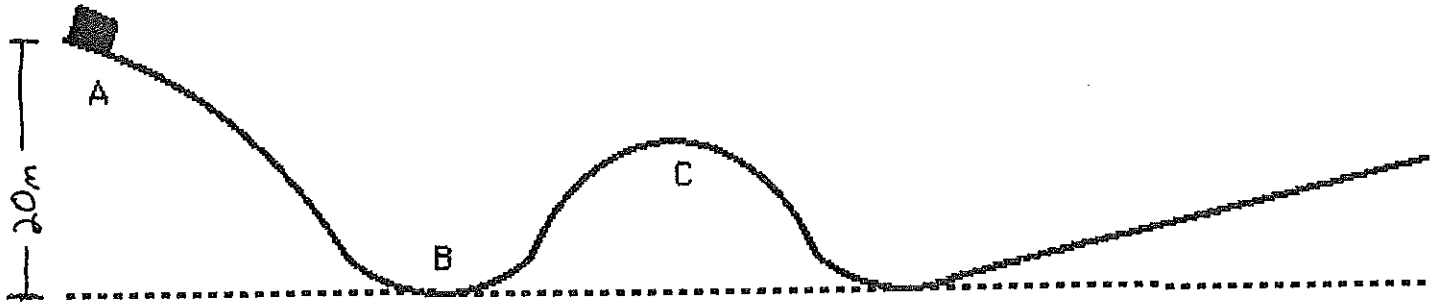
PHYSICS
WORKSHEET A
TRANSFER OF ENERGY

NAME: _____ DATE: ____



The block shown above is at rest, but if given a little push it will slide down the hill. When it does, the potential energy it has at point A will be converted to kinetic energy. Since there is no friction to convert mechanical energy to heat energy, the sum of PE and KE at any point on the track will always be the same. (Use this fact to answer the following questions.) The mass of the block is 3kg.

$$PE = mgh$$
$$KE = 1/2mv^2$$

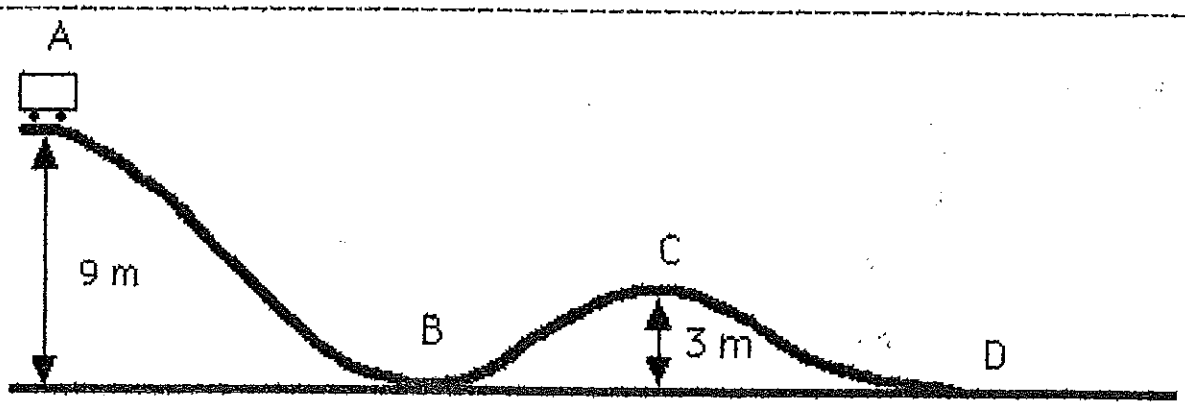
1. What is the block's potential energy at point A?
   600J
2. What is the block's kinetic energy at point B?
   600J
3. What is the block's velocity at point B?
   20m/s
4. What is the block's potential energy at point C?
   300J
5. What is the block's kinetic energy at point C?
   300 J
6. What is the block's speed at C?
   14.1 m/s
7. How high (vertical measure) will the block be on the hill at right when its speed is half of its speed at the botom?
   KE = 150J PE = 450J (15m)
8. How high (vertical measure) will the block rise along the right hill?
   20m

6. When a baseball has a speed of 30 m/s its KE is 270 Joules. What is its mass?

1.6 kg

7. A car whose mass is 1200 kg has a KE of 170,000 Joules. What is its speed?

16.8 m/s



8. The cart shown above has a mass of 3 kg. Answer the following questions using the diagram above.

a. What is the PE at point A? 270

b. What is the KE at point B? 270

c. What is the speed at point B? 13.4

d. What is the Total Energy of the cart at point C? 270

e. What is the PE at point C? 90

f. What is the KE at point C? 180

g. What is the speed of the cart at point C? 11 m/s (10.75 m/s)

h. What is the Total Energy at point D? 270 J