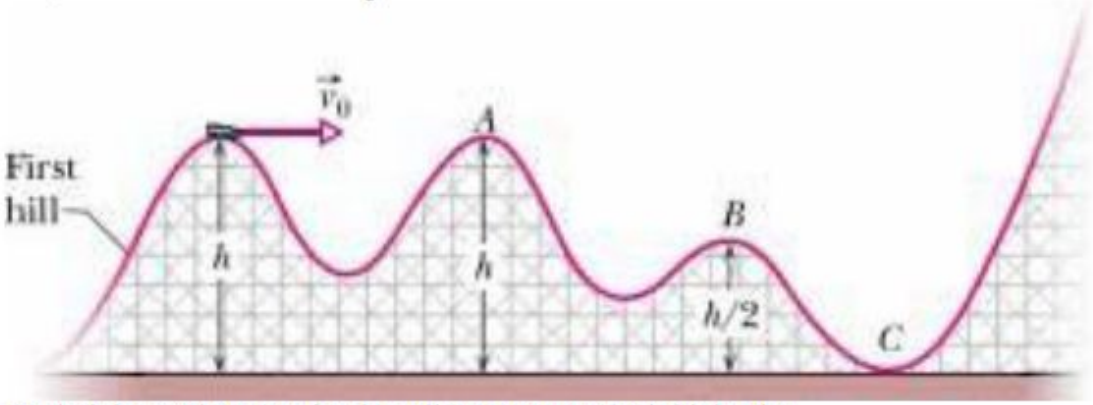
Conservation of Energy Worksheet Name: _____

PE $_{before}$ + KE $_{before}$ = PE $_{after}$ + KE $_{after}$ PE = mgh KE = ½ mv^2 g = 9.81 m/s^2

3. A 100 kg roller coaster comes over the first hill at 2 m/sec (v_o). The height of the first hill (h) is 20 meters. See roller diagram below.



1) Find the total energy for the roller coaster at the initial point.

2) Find the *potential energy* at point A using the PE formula.

3) Use the *conservation of energy* to find the kinetic energy (KE) at point B.

4) Find the *potential energy* at point C.

5) Use the *conservation of energy* to find the Kinetic Energy (KE) of the roller coaster at point C.

6) Use the *Kinetic Energy* from C, find velocity of the roller coaster at point C.

7)

Use the conservation of energy to find the velocity of the roller coaster at point A. Use the methods we learned in class to show your work.

8)

Use the conservation of energy to find the velocity of the roller coaster at point B. Use the methods we learned in class to show your work.

9)

Use the conservation of energy to find the velocity of the roller coaster at point C. Use the methods we learned in class to show your work.

10)

Use the conservation of energy to find how high the roller will climb the last hill. Use the methods we learned in class to show your work.