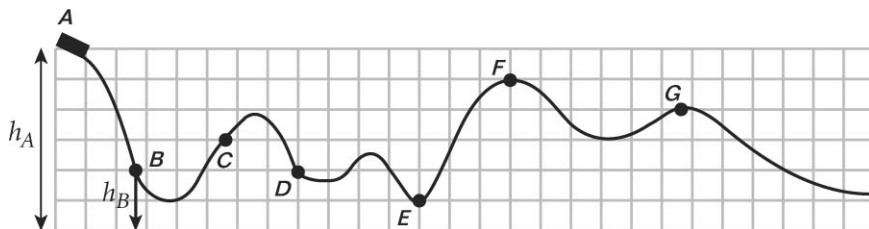


Work and Energy

Diagram Skills

Conservation of Energy

A roller-coaster car with a mass of m moves along a smooth track as diagrammed in the graph below. The car leaves point A with no initial velocity and travels to other points along the track. The zero energy level is taken as the energy of point A.



1. a. What is the car's kinetic energy at point A? _____
 b. What is the potential energy associated with the car at point A? _____
 c. What is the car's kinetic energy at point B? _____
 d. What is the potential energy associated with the car at point B? _____
2. a. What is the speed of the car at point A? _____
 b. What is the speed of the car at point B? _____
3. Assume the mass of the car is 65.0 kg and it starts at 30.0 m above the ground. Use the graph above to find the kinetic energy, potential energy, and velocity for points C, D, E, F, and G to complete the table.

| Location | KE_A | PE_A | $KE_{location}$ | $PE_{location}$ | $v_{location}$ |
|----------|--------|--------|-----------------|-----------------|----------------|
| C | | | | | |
| D | | | | | |
| E | | | | | |
| F | | | | | |
| G | | | | | |

4. For each location, what do you notice about the sum $KE_A + PE_A$ compared with the sum $KE_{location} + PE_{location}$?
