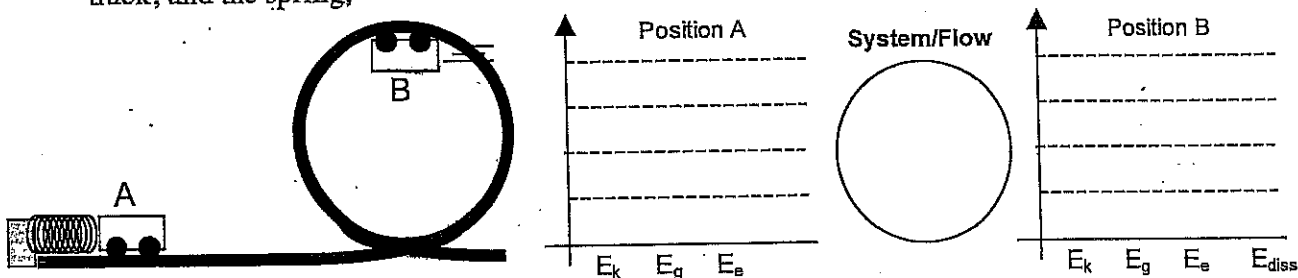


Energy Model Worksheet 2: Qualitative Energy Storage & Conservation with Bar Graphs

For each situation shown below:

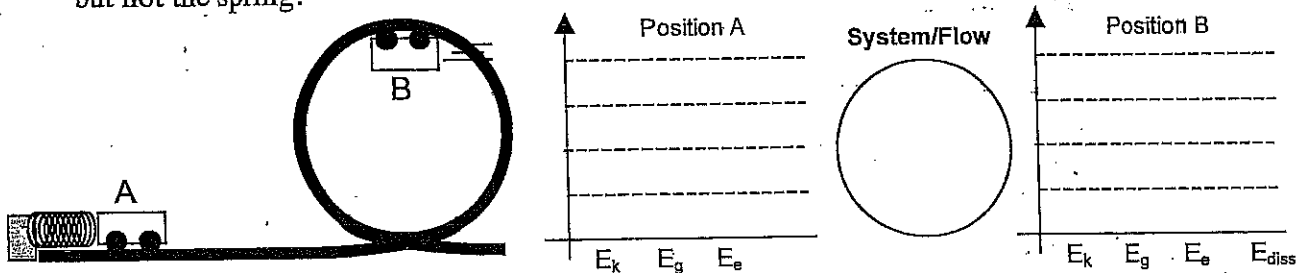
1. List objects in the system within the circle. ***Always include the earth's gravitational field in your system.*
2. On the physical diagram, indicate your choice of zero height for measuring gravitational energy.
3. Sketch the energy bar graph for position A, indicate any energy flow into or out of the system from position A to position B on the System/Flow diagram, and sketch the energy bar graph for position B.
4. Write a qualitative energy equation that indicates the initial, transferred, and final energy of your system.

In the situation shown below, a spring launches a roller coaster cart from rest on a frictionless track into a vertical loop. Assume the system consists of the cart, the earth, the track, and the spring,



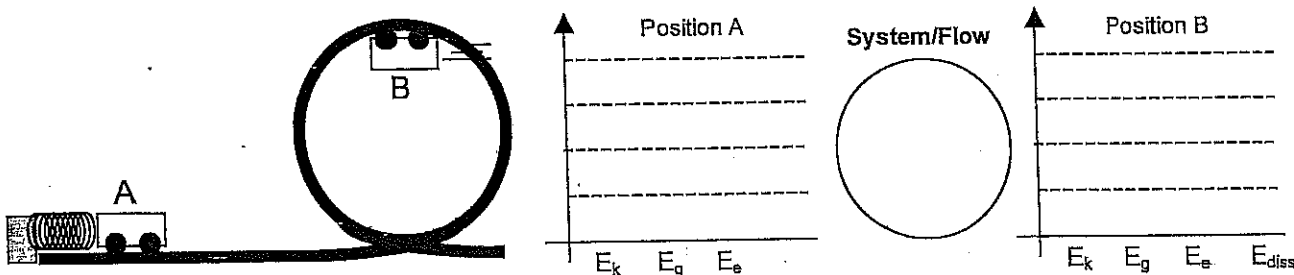
Qualitative Energy Conservation Equation:

Repeat problem 1a for a frictionless system that includes the cart, the earth, and the track, but not the spring.



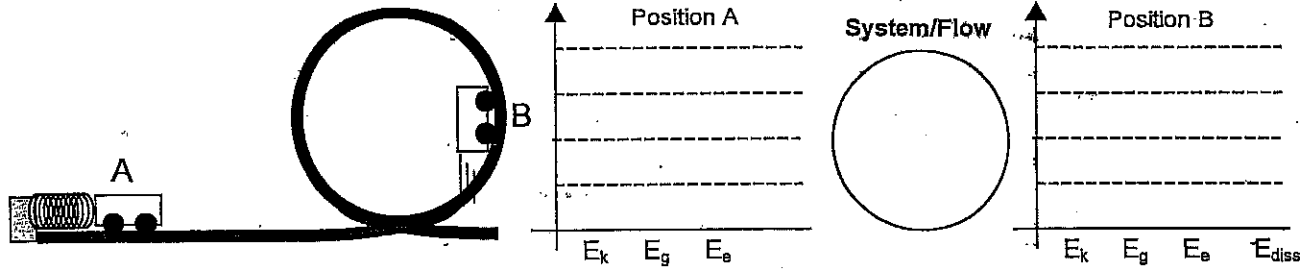
Qualitative Energy Conservation Equation:

Use the same system as problem 1a, but assume that there is friction between the cart and the track.



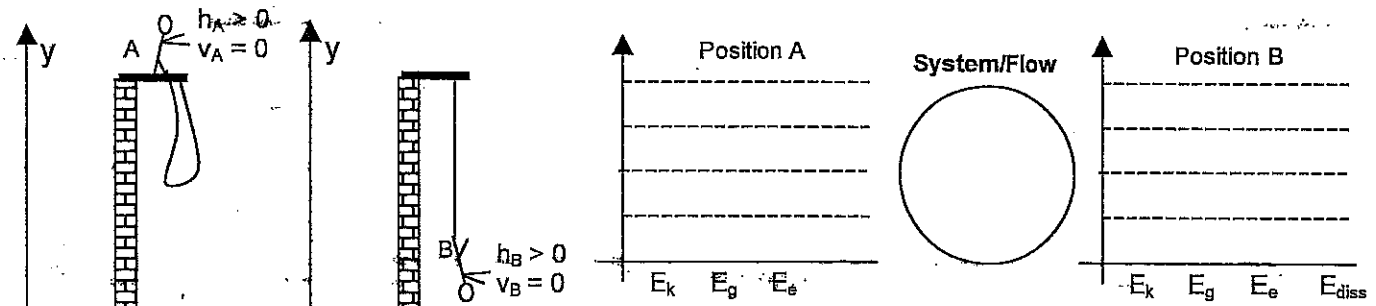
Qualitative Energy Conservation Equation:

This situation is the same as problem 1a except that the final position of the cart is lower on the track. Make sure your bars are scaled consistently between problem 1 and 4. Assume the system consists of the cart, the earth, the track, and the spring.



Qualitative Energy Conservation Equation:

A bungee jumper falls off the platform and reaches the limit of stretch of the cord. Analyze this situation for a frictionless system that consists of the jumper, the earth, and the cord.



6b. Repeat problem 6a if the cord is not part of the system.

