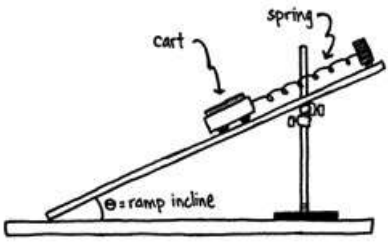
NAME _____ DATE _____

Scenario

Blake and Carlos are challenged to find the mass of an unknown cart by attaching it to a spring of known spring constant on an incline as shown at right. Assume the spring is ideal and there are no frictional losses in the cart.



PART A: Describe an experimental procedure the students could use to collect the data needed to determine the mass of the cart.

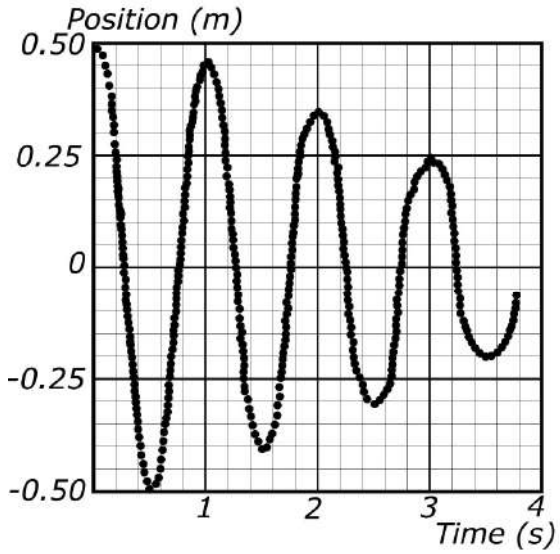
i. What quantities would be measured?

ii. What equipment would be used for the measurements, and how would that equipment be used?

iii. Describe the overall procedure to be used. Give enough detail so that another student could replicate the experiment.

PART B: Describe how the data from the measurements could be analyzed to determine the mass of the cart.

PART C: One group creates a position vs. time graph using a motion sensor as shown below. Explain how the group could use the graph to calculate the mass of the cart.



PART D: The actual mass of the cart is significantly less than the calculated mass in Part C. Give one reasonable physical explanation for the difference.

PART E: The group repeated their experiment from Part C but halved the distance they stretched the spring before releasing the cart. On the graph for Part C, sketch the position vs. time graph that this group can expect to see.