Newton's Laws of Motion

As you work through the steps in the lab procedure, record your experimental values and the results on this worksheet. Use the exact values you record for your data to make later calculations.

For acceleration due to gravity, use $g = 9.81\text{m/s}^2$.

Experiment 1 - Newton's First Law - Data

Record the mass of the mass hanger plus weight.

Record the mean value of the recorded force.

Calculate the force of gravity acting on the hanger and mass combined.

Upload the file with your graphs. Do a print screen and save the graphs as a file with a maximum size of 1 MB. (*You will upload this file in the WebAssign question.*) Print the graph for your TA to sign, and for your reference.

Experiment 2 - Newton's Second Law - Data

Record the slope of the acceleration vs. force graph, and its uncertainty.

Record the theoretical mass. (mass of the cart + force sensor)

Upload the file with your graphs. Do a print screen and save the graphs as a file with a maximum size of 1 MB. (*You will upload this file in the WebAssign question.*) Print the graph for your TA to sign, and for your reference.

Experiment 3 - Newton's Third Law - Data

Complete the table.

Table 1

Type of Collision	Force produced by cart 1 on cart 2 (N)	Force produced by cart 2 on cart 1 (N)
first cart hits the second cart; the second cart is at rest		
two carts move towards each other		
tug-o-war	Force of force sensor A on force sensor B (N)	Force of force sensor B on force sensor A (N)

Upload the file with your graphs. Do a print screen and save the graphs as a file with a maximum size of 1 MB. (*You will upload this file in the WebAssign question.*) Print the graph for your TA to sign, and for your reference.