Momentum and Uniformly Acelerated 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.

Speed Increasing

Upload your graphs. (Submit a file with a maximum size of 1 MB. *You will upload this file in the WebAssign question.*)

Record the initial conditions needed to produce this graph.

Record Δp_x for the one-second interval.

Record Δp_x for the two-second interval.

Record the net force during the one-second and two-second intervals. (Indicate the direction with the sign of your answer.)

Force Opposite to Initial Velocity

Upload your graphs. (Submit a file with a maximum size of 1 MB. *You will upload this file in the WebAssign question.*)

Record the initial conditions needed to produce this graph.

Record Δp_x in a one-second interval while the cart is heading in the $+x$ direction.

Record Δp_x in a one-second interval while the cart is heading in the $-x$ direction.

Record the net force during the $+x$ and $-x$ intervals. (Indicate the direction with the sign of your answer.)

Analysis

Answer the following questions as a group. Make your answers brief (a few sentences) but clear.

Assuming that the force on the fan cart due to the air is constant, should Δp_x over a one-second time interval be the same in both situations (cart heading in $+x$ and $-x$ directions)? Why or why not? Clearly explain your reasoning about this, then check with another group.

From your data, do you get the same value or different values for Δp_x over a one-second time interval in the two situations? What can you conclude from your observations?

Clearly explain your observations in the Increasing Speed and Force Opposite to Initial Velocity sections from the lab in terms of the Momentum Principle or Newton's 2nd Law.