Momentum and Collision Lab

Procedure

Briefly, but completely, describe the procedure you used – and include labeled sketches.

Data   **diameter _____**

$m_A =$		$m_B =$	

t_{Ai}	v_{Ai}	t_f	v_f

$m_A =$		$m_B =$	

t_{Ai}	v_{Ai}	t_f	v_f

$m_A =$		$m_B =$	

t_{Ai}	v_{Ai}	t_f	v_f

Graphs

Using appropriate scales, labels and units, graph v_f on the *y*-axis and v_{Ai} on the *x*-axis. Graph all three data sets on the same graph, but use colors to distinguish the points. Draw the best fits line for each data set, using the appropriate color to match the data.

Questions

1) Use the conservation of momentum formula to derive the linear equation that matches your graph. According to your derivation, what should the slope of your graph represent?
2) Use measurements, and your result from the previous question, to calculate the theoretical value of the slope of the best fits line for each data set.
3) Was the collision in the lab elastic? Using data from one trial, explain your answer.
4) Find the slopes of all three of your best fits lines. Show your work.
5) Use the values for the slopes you calculated in Question #2 as the accepted values and find the percent errors for the slopes from your graph.

Error Analysis

Thoroughly explain what the main sources of error are for this lab, and how you would correct them.

Why science teachers are not asked to monitor recess.