Momentum Labs

Name_____

Purpose: To test the conservation of momentum under different conditions.

Procedure: As stated in class.

Conditions:	
Type 1: glider masses are approx equal; $v_2 = 0$	Type A: glider masses are approx equal; $v_2 = 0$
Type 2: glider $m_1 > m_2$; $v_2 = 0$	Type B: glider $m_1 > m_2$; $v_2 = 0$
Type 3: glider $m_1 < m_2$; $v_2 = 0$	Type C: glider masses are approx equal; $v_2 \neq 0$

Data & Calculations:

Type	Elastic		
TRIAL	1	2	3
m_1	210	310	210
m_2	210	210	310
v_1			
v_2	0	0	0
v_1'	0		
v_2'			
p			
p'			
% diff			

Type	Inelastic		
TRIAL	A	B	C
m_1	210	310	210
m_2	210	210	210
v_1			
v_2	0	0	
v'			
p			
p'			
% diff			

formulas: $p = p'$

elastic: $m_1v_1 + m_2v_2 = m_1v_1' + m_2v_2'$

inelastic: $m_1v_1 + m_2v_2 = (m_1 + m_2)\, v'$

% difference: $(p - p') / p * 100$

Questions:

1. How did the initial and final momentums compare? Was momentum conserved?

2. Were there any trial types that were farther off than others? Why??

3. (a) How does the final speed of the inelastic gliders compare to those from the elastic lab?

(b) Which would have a greater impulse?

(c) Why are cars designed to collide inelastically?

4. Name an example of each type of momentum in real life.

5. How could you set up a trial to test for explosion type momentum? What problems would you have trying to let it go?