PHY 123 EXPT 5 Linear Momentum - Worksheet (Fall 2013)

\[ w_s \pm \Delta w_s: \quad [ \quad ] \quad m_s \pm \Delta m_s: \quad [ \quad ] \]

\[ w_b \pm \Delta w_b: \quad [ \quad ] \quad m_b \pm \Delta m_b: \quad [ \quad ] \]

(In Insert proper units between all brackets [ ] on this worksheet)

**Elastic Collision - sliding small glider into big glider:**

Directions of two gliders after collision: _______________________________

Table 1:

<table>
<thead>
<tr>
<th>Glider</th>
<th>( t_i ) [ ]</th>
<th>( t_i' ) [ ]</th>
</tr>
</thead>
<tbody>
<tr>
<td>small</td>
<td></td>
<td></td>
</tr>
<tr>
<td>big</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Using the output from the computer calculate, including errors:

Total momentum before collision: ________________________________ [ ]

Total momentum after collision: ________________________________ [ ]

Total kinetic energy before collision: ____________________________ [ ]

Total kinetic energy after collision: _____________________________ [ ]

Is momentum conserved? (Justify your answer)

Is kinetic energy conserved? (Justify your answer)

**Elastic collision sliding big glider into small glider**

Directions of two gliders after collision: _______________________________

Table 2:

<table>
<thead>
<tr>
<th>Glider</th>
<th>( t_i ) [ ]</th>
<th>( t_i' ) [ ]</th>
</tr>
</thead>
<tbody>
<tr>
<td>small</td>
<td></td>
<td></td>
</tr>
<tr>
<td>big</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Using the output from the computer calculate, including errors:

Total momentum before collision: ________________________________ [ ]

Total momentum after collision: ________________________________ [ ]

Total kinetic energy before collision: ____________________________ [ ]

Total kinetic energy after collision: _____________________________ [ ]

Is momentum conserved? (Justify your answer)

Is kinetic energy conserved? (Justify your answer)
Inelastic collision sliding big glider into small glider with Velcro

Directions of two gliders after collision: __________________________________________

Table 3:

<table>
<thead>
<tr>
<th></th>
<th>( t_i )</th>
<th>( t_i' )</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-collision</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post-collision</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Using the output from the computer calculate, including errors:

Total momentum before collision: __________________________________________ [ ]
Total momentum after collision: __________________________________________ [ ]
Total kinetic energy before collision: __________________________________ [ ]
Total kinetic energy after collision: __________________________________ [ ]

Is momentum conserved? (Justify your answer) ______________________________________

Is kinetic energy conserved? (Justify your answer) ____________________________________