**Data – blank lines in excess of your experiment are provided**

|  |  |  |
| --- | --- | --- |
|  | Cart 1 | Cart 2 |
| Run # | M1 (kg) | Vo1 (m/s) | Vf1 (m/s) | M2 (kg) | Vo2 (m/s) | Vf2 (m/s) |
| Step 9: Cart 2 at rest |  |  |  |  |  |  |
| Step 11¨ 2nd run Cart 2 at rest |  |  |  |  |  |  |
| Step 12: Cart 2 + 500 gm at rest |  |  |  |  |  |  |
| Step 13: Cart 1 at rest with Cart 2 500 gm heavier |  |  |  |  |  |  |
| Step 15: Velcro Cart 2 at rest |  |  |  |  |  |  |
| Step 16: Velcro 2nd run Cart 2 at rest |  |  |  |  |  |  |
| Step 17: Velcro Cart 2 + 500 gm at rest |  |  |  |  |  |  |
| Step 18: Velcro Cart 1 at rest with Cart 2 500 gm heavier |  |  |  |  |  |  |
| Extra row |  |  |  |  |  |  |
| Extra row |  | Pf1 = M1\*Vf1 |  |  |  |  |

Po1 = M1\*Vo1

Pf2 = M2\*Vf2

Po2 = M2\*Vo2

**Momentum Results Table – extra lines are provided**

Pt = Pft-Pot

Pft = Pf1+Pf2

Pot = Po1+Po2

| Run # | Po1(kg m/s) | Po2(kg m/s) | Pot(kg m/s) | Pf1(kg m/s) | Pf2(kg m/s) | Pft(kg m/s) | Pt(kg m/s) | %Diff |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Step 9: Cart 2 at rest |  |  |  |  |  |  |  |  |
| Step 11¨ 2nd run Cart 2 at rest |  |  |  |  |  |  |  |  |
| Step 12: Cart 2 + 500 gm at rest |  |  |  |  |  |  |  |  |
| Step 13: Cart 1 at rest with Cart 2 500 gm heavier |  |  |  |  |  |  |  |  |
| Step 15: Velcro Cart 2 at rest |  |  |  |  |  |  |  |  |
| Step 16: Velcro 2nd run Cart 2 at rest |  |  |  |  |  |  |  |  |
| Step 17: Velcro Cart 2 + 500 gm at rest |  |  |  |  |  |  |  |  |
| Step 18: Velcro Cart 1 at rest with Cart 2 500 gm heavier |  |  |  |  |  |  |  |  |
| Extra row |  |  |  |  |  |  |  |  |
| Extra row |  |  |  |  |  |  |  |  |

|  |  |  |
| --- | --- | --- |
|  | Cart 1 | Cart 2 |
| Run #$$E\_{o1}= \frac{1}{2}M\_{1}V\_{o1}^{2}$$ | M1 (kg)$$E\_{o2}= \frac{1}{2}M\_{2}V\_{o2}^{2}$$ | Vo1 (m/s) | Vf1 (m/s) | M2 (kg) | Vo2 (m/s) | Vf2 (m/s) |

$$E\_{f1}= \frac{1}{2}M\_{1}V\_{f1}^{2}$$

$$E\_{f2}= \frac{1}{2}M\_{2}V\_{f2}^{2}$$

**Energy Results** (MM=magnet to magnet, VV=Velcro to Velcro)

Et = Eft-Eot

Eft = Ef1+Ef2

Eot = Eo1+Eo2

| Run # | Eo1 (J) | Eo2(J) | Eot(J) | Ef1(J) | Ef2(J) | Eft(J) | Et(J) | %Diff |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Step 9: Cart 2 at rest, MM |  |  |  |  |  |  |  |  |
| Step 11¨ 2nd run Cart 2 at rest, MM |  |  |  |  |  |  |  |  |
| Step 12: Cart 2 + 500 gm at rest, MM |  |  |  |  |  |  |  |  |
| Step 13: Cart 1 at rest with Cart 2 500 gm heavier, MM |  |  |  |  |  |  |  |  |
| Step 15: Velcro Cart 2 at rest, VV |  |  |  |  |  |  |  |  |
| Step 16: Velcro 2nd run Cart 2 at rest, VV |  |  |  |  |  |  |  |  |
| Step 17: Velcro Cart 2 + 500 gm at rest, VV |  |  |  |  |  |  |  |  |
| Step 18: Velcro Cart 1 at rest with Cart 2 500 gm heavier, VV |  |  |  |  |  |  |  |  |
| Extra row |  |  |  |  |  |  |  |  |
| Extra row |  |  |  |  |  |  |  |  |