	A	B	C	D	E	F
1	Aidan Chin					
2	45210					
3	ECE 202 E1					
4	http://hyperphysics.phy-astr.gsu.edu/hbase/elacol2.html					
5	Aidan Carey					
6	This excel document calculates the final velocity of 2 carts in elatic collision					
7						
8	\/ fix these labels	Original Sim	m1 Change	m2 Change	v1i Change	v2i Change
9	**GIVENS**					
10	cart masses:					
11	m1 (g)	250	50	250	250	250
12	m2 (g)	150	150	500	150	150
13						
14	initial velocities:					
15	v1i (cm/s)	30	30	30	40	30
16	v2i (cm/s)	-40	-40	-40	-40	-60
17						
18	**CALCULATIONS**					
19	total mass:					
20	M (g)	=B11+B12	=C11+C12	=D11+D12	=E11+E12	=F11+F12
21						
22	final velocities:					
23	v1f (cm/s)	=(B11-B12)/B20*B15+2*B12/B20*B16	=(C11-C12)/C20*C15+2*C12/C20*C16	=(D11-D12)/D20*D15+2*D12/D20*D16	=(E11-E12)/E20*E15+2*E12/E20*E16	=(F11-F12)/F20*F15+2*F12/F20*F16
24	v2f (cm/s)	=2*B11/B20*B15-(B11-B12)/B20*B16	=2*C11/C20*C15-(C11-C12)/C20*C16	=2*D11/D20*D15-(D11-D12)/D20*D16	=2*E11/E20*E15-(E11-E12)/E20*E16	=2*F11/F20*F15-(F11-F12)/F20*F16
25						
26	**CHECKS**					
27	momentum:					
28	Pi (N)	=B11*B15+B12*B16	=C11*C15+C12*C16	=D11*D15+D12*D16	=E11*E15+E12*E16	=F11*F15+F12*F16
29	Pf (N)	=B11*B23+B12*B24	=C11*C23+C12*C24	=D11*D23+D12*D24	=E11*E23+E12*E24	=F11*F23+F12*F24
30	checkMomentum	=B28-B29	=C28-C29	=D28-D29	=E28-E29	=F28-F29
31	should add to zero ^					
32	energy:					
33	Ei (J)	=0.5*B11*B15^2 + 0.5*B12*B16^2	=0.5*C11*C15^2 + 0.5*C12*C16^2	=0.5*D11*D15^2 + 0.5*D12*D16^2	=0.5*E11*E15^2 + 0.5*E12*E16^2	=0.5*F11*F15^2 + 0.5*F12*F16^2
34	Ef (J)	=0.5*B11*B23^2 + 0.5*B12*B24^2	=0.5*C11*C23^2 + 0.5*C12*C24^2	=0.5*D11*D23^2 + 0.5*D12*D24^2	=0.5*E11*E23^2 + 0.5*E12*E24^2	=0.5*F11*F23^2 + 0.5*F12*F24^2
35	checkEnergy	=B33-B34	=C33-C34	=D33-D34	=E33-E34	=F33-F34
36	should add to zero ^					