	A	B	C	D	E	F	G	H	I	J	K	L
1	Your name			Date								
2	Partner's name											
3												
4	**Phys 1101/1120 - Richmond campus**				**DISCLAIMER: These example data are purposefully**							
5	**Expt. 8: Projectile Motion**				**inaccurate. You may test your spreadsheet equations**							
6					**for correctness using these values, but your real**							
7	**DATA:**				**experimental values will be very different.**							
8												
9	**Height of ends of level tube:**				**Diameter of steel ball:**				**Measured values of Range:**			
10	**h1 (cm)**	**dh1 (cm)**	**dh1/h1**		**d (mm)**	**δd (mm)**	**δd/d**			**Rm (cm)**	**dRm (cm)**	**dR/R**
11	**150**	**0.5**	0.33%		**30**	**0.03**	0.10%		1	**95.5**	**0.2**	0.21%
12									2	**95**	**0.2**	0.21%
13	**h2 (cm)**	**dh2 (cm)**	**dh2/h2**		**Acceleration due to gravity:**				3	**94.5**	**0.2**	0.21%
14	**100**	**0.5**	0.50%		**g (m/s^2)**	**dg (m/s^2)**	**dg/g**		4	**94**	**0.2**	0.21%
15					**9.81**	**0.01**	0.10%		5	**94.5**	**0.2**	0.21%
16	**Height of ends of tilted tube:**											
17	**h1f (cm)**	**dh1f (cm)**	**dh1f/h1f**									
18	**127**	**0.5**	0.39%									
19												
20	**h2f (cm)**	**dh2f (cm)**	**dh2f/h2f**									
21	**110**	**0.5**	0.45%									
22												
23	**CALCULATIONS:**											
24												
25	**Height of ends of level tube:**				**Diameter of steel ball:**				**Measured values of Range:**			
26	**h1 (m)**	**dh1 (m)**	**dh1/h1**		**d (m)**	**δd (m)**	**δd/d**		**Rexp (m)**	**dRexp (m)**	**(dR/R)exp**	
27	1.5	0.005	0.33%		0.03	0.00003	0.10%	1	0.955	0.002	0.21%	
28								2	0.95	0.002	0.21%	
29	**h2 (m)**	**dh2 (m)**	**dh2/h2**		**Radius of steel ball:**			3	0.945	0.002	0.21%	
30	1	0.005	0.50%		**r (m)**	**dr (m)**	**dr/r**	4	0.94	0.002	0.21%	
31					0.015	0.000015	0.10%	5	0.945	0.002	0.21%	
32	**Height of ends of tilted tube:**											
33	**h1f (m)**	**dh1f (m)**	**dh1f/h1f**						**Average experimental Range:**			
34	1.27	0.005	0.39%						**Rexp (m)**	**dRexp (m)**	**(dR/R)avgexp**	
35									0.947	0.005099	0.54%	
36	**h2f (m)**	**dh2f (m)**	**dh2f/h2f**									
37	1.1	0.005	0.45%									
38												
39	**Initial horizontal velocity of ball:**				**Time of flight of ball:**				**Theoretical Range:**			
40	**v (m/s)**	**dv (m/s)**	**dv/v**		**t (s)**	**dt (s)**	**dt/t**		**Rth (m)**	**dRth (m)**	**(dR/R)theory**	
41	2.150515	0.032602	1.52%		0.448124418	0.00116	0.26%		0.963698	0.014821	1.54%	
42												
43	**Sub-calculations for init. horiz. v:**				**Sub-calculations for t and dt:**							
44	**d(h1-h2)**	0.007071			**h2-r**	0.985						
45	**d(h1f-h2f)**	0.007071			**d(h2-r)**	0.005						
46	**d([h1-h2] - [h1f - h2f])**				**d(h2-r)/(h2-r)**	0.005076						
47		0.01										
48	**([h1-h2] - [h1f-h2f])**											
49		0.33										
50	**d([h1-h2] - [h1f - h2f]) / ([h1-h2] - [h1f-h2f])**											
51		0.030303										