

	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 inaccurate. You may test your spreadsheet equations for correctness using these values, but your real experimental values will be very different.							
5	Expt. 3: The Ideal Spring											
6												
7	DATA - PART A:											
8												
9	Accel. due to gravity											
10	g (m/s^2)	dg (m/s^2)	dg/g									
11	9.81	0.01	0.10%									
12												
13	Total mass including hanger:				Extension:							
14	m_a (g)	dm_a (g)	(dm/m)_a	x (cm)	dx (cm)	dx/x						
15	111	0.05	0.05%	1	0.1	10.00%						
16	151	0.05	0.03%	2	0.1	5.00%						
17	191	0.05	0.03%	3	0.1	3.33%						
18	231	0.05	0.02%	4	0.1	2.50%						
19	271	0.05	0.02%	5	0.1	2.00%						
20	311	0.05	0.02%	6	0.1	1.67%						
21	351	0.05	0.01%	7	0.1	1.43%						
22	371	0.05	0.01%	7.5	0.1	1.33%						
23												
24	CALCULATIONS - PART A:											
25												
26	Total mass:			Force:			Extension:					
27	M (kg)	dM (kg)	dM/M	F_g (N)	dF_g (N)	(dF/F)_g	x (m)	dx (m)	dx/x			
28	0.111	0.00005	0.05%	1.08891	0.001214	0.11%	0.01	0.001	10.00%			
29	0.151	0.00005	0.03%	1.48131	0.001588	0.11%	0.02	0.001	5.00%			
30	0.191	0.00005	0.03%	1.87371	0.001972	0.11%	0.03	0.001	3.33%			
31	0.231	0.00005	0.02%	2.26611	0.002362	0.10%	0.04	0.001	2.50%			
32	0.271	0.00005	0.02%	2.65851	0.002754	0.10%	0.05	0.001	2.00%			
33	0.311	0.00005	0.02%	3.05091	0.003148	0.10%	0.06	0.001	1.67%			
34	0.351	0.00005	0.01%	3.44331	0.003544	0.10%	0.07	0.001	1.43%			
35	0.371	0.00005	0.01%	3.63951	0.003742	0.10%	0.075	0.001	1.33%			
36												
37												
38												
39												
40												
41												
42												
43												
44												
45												
46												

	M	N	O	P	Q	R	S	T	U	V	W	X
1												
2												
3												
4												
5												
6												
7	DATA - PART B:											
8												
9	Total mass including hanger:				10 Periods of Oscillation:							
10	m_a (g)	dm_a (g)	(dm/m)_a		t (s)	dt (s)	dt/t					
11	221	0.05	0.02%		4.7285	0.15	3.17%					
12	241	0.05	0.02%		4.9379	0.15	3.04%					
13	251	0.05	0.02%		5.0393	0.15	2.98%					
14	271	0.05	0.02%		5.2362	0.15	2.86%					
15	291	0.05	0.02%		5.426	0.15	2.76%					
16	311	0.05	0.02%		5.6093	0.15	2.67%					
17	341	0.05	0.01%		5.8737	0.15	2.55%					
18	371	0.05	0.01%		6.1266	0.15	2.45%					
19												
20												
21												
22												
23												
24	CALCULATIONS - PART B:											
25												
26	Total mass:				Period: ($T_{1 \text{ bounce}} = t_{10 \text{ bounces}} \div 10$)				Period squared:			
27	M (kg)	dM (kg)	dM/M		T (s)	dT (s)	dT/T		T^2 (s^2)	dT^2 (s^2)	d(T^2)/(T^2)	
28	0.221	0.00005	0.02%		0.47285	0.015	3.17%		0.223587123	0.0141855	6.34%	
29	0.241	0.00005	0.02%		0.49379	0.015	3.04%		0.243828564	0.0148137	6.08%	
30	0.251	0.00005	0.02%		0.50393	0.015	2.98%		0.253945445	0.0151179	5.95%	
31	0.271	0.00005	0.02%		0.52362	0.015	2.86%		0.274177904	0.0157086	5.73%	
32	0.291	0.00005	0.02%		0.5426	0.015	2.76%		0.29441476	0.016278	5.53%	
33	0.311	0.00005	0.02%		0.56093	0.015	2.67%		0.314642465	0.0168279	5.35%	
34	0.341	0.00005	0.01%		0.58737	0.015	2.55%		0.345003517	0.0176211	5.11%	
35	0.371	0.00005	0.01%		0.61266	0.015	2.45%		0.375352276	0.0183798	4.90%	
36												
37												
38												
39									Slope from Linegraph:			
40									slope (s^2/kg)	dslope (s^2/kg)	dslope/slope	
41									1.0117	0.2189	21.64%	
42												
43												
44									Spring Constant:			
45									k (kg/s^2)	dk (kg/s^2)	dk/k	
46									39.02186182	8.443101268	21.64%	