

	A	B	C	D	E	F
1	Phys 1102/1220 - 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.		
2	Experiment 2: Thin Lenses					
3	Your name, Partner's Name					
4	Date					
5						
6	Part A: The Converging Lens					
7	DATA					
8	Object Position					
9	Po (cm)	δP_o (cm)	$\delta P/P_o$			
10	10	0.01	0.10%			
11						
12	Converging Lens Position			Image Position		
13	PL (cm)	δPL (cm)	$\delta P/P_L$	Pi (cm)	δP_i (cm)	$\delta P/P_i$
14	25	0.01	0.04%	122.5	0.01	0.01%
15	30	0.01	0.03%	67.1	0.01	0.01%
16	35	0.01	0.03%	62.1	0.01	0.02%
17	40	0.01	0.03%	62.9	0.01	0.02%
18	45	0.01	0.02%	65.7	0.01	0.02%
19	50	0.01	0.02%	69.3	0.01	0.01%
20						
21	CALCULATIONS					
22	Object Distance			Image Distance		
23	do (cm)	δdo (cm)	$\delta do/do$	di (cm)	δdi (cm)	$\delta di/di$
24	15	0.014142136	0.09%	97.5	0.014142136	0.01%
25	20	0.014142136	0.07%	37.1	0.014142136	0.04%
26	25	0.014142136	0.06%	27.1	0.014142136	0.05%
27	30	0.014142136	0.05%	22.9	0.014142136	0.06%
28	35	0.014142136	0.04%	20.7	0.014142136	0.07%
29	40	0.014142136	0.04%	19.3	0.014142136	0.07%
30						
31	Inverse Object Distance			Inverse Image Distance		
32	1/do (cm ⁻¹)	$\delta[1/do]$ (cm ⁻¹)	$\delta[1/do]/[1/do]$	1/di (cm ⁻¹)	$\delta[1/di]$ (cm ⁻¹)	$\delta[1/di]/[1/di]$
33	0.066666667	6.28539E-05	0.09%	0.01025641	1.48767E-06	0.01%
34	0.05	3.53553E-05	0.07%	0.026954178	1.02747E-05	0.04%
35	0.04	2.26274E-05	0.06%	0.036900369	1.92565E-05	0.05%
36	0.033333333	1.57135E-05	0.05%	0.043668122	2.69677E-05	0.06%
37	0.028571429	1.15446E-05	0.04%	0.048309179	3.30046E-05	0.07%
38	0.025	8.83883E-06	0.04%	0.051813472	3.79665E-05	0.07%
39						
40	y-intercept of Eq. 1, from Linegraph v2					
41	b (cm ⁻¹)	δb (cm ⁻¹)	$\delta b/b$			
42	0.076846491	0.000227558	0.30%			
43						
44	Focal length of converging lens					
45	f (cm)	δf (cm)	$\delta f/f$			
46	13.01295598	0.038533968	0.30%			
47						
48	UNCERT SUB-CALCS					
49	$\partial[1/do]/\partial do$	$\partial[1/di]/\partial di$	$\partial f/\partial b$			
50	-0.004444444	-0.000105194	-169.3370233			
51	-0.0025	-0.000726528				
52	-0.0016	-0.001361637				
53	-0.001111111	-0.001906905				
54	-0.000816327	-0.002333777				
55	-0.000625	-0.002684636				

	A	B	C	D	E	F	G
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2	Experiment 2: Thin Lenses			inaccurate. You may test your spreadsheet equations			
3	Your name, Partner's Name			for correctness using these values, but your real			
4	Date			experimental values will be very different.			
5							
6	Part B: The Diverging Lens						
7	DATA						
8	Image 1 Position						
9	Pi_1 (cm)	δP_{i1} (cm)	$\delta P/P_{i1}$				
10	40	0.01	0.03%				
11							
12	Diverging Lens Position			Image 2 Position			
13	PL (cm)	δPL (cm)	$\delta P/P_L$	Pi_2 (cm)	δP_{i2} (cm)	$\delta P/P_{i2}$	
14	36.5	0.01	0.03%	45	0.01	0.02%	
15	36	0.01	0.03%	48	0.01	0.02%	
16	35.5	0.01	0.03%	54	0.01	0.02%	
17							
18	CALCULATIONS						
19	Object Distance (For Diverging Lens)			Image Distance (For Diverging Lens)			
20	do (cm)	δdo (cm)	$\delta do/do$	di (cm)	δdi (cm)	$\delta di/di$	
21	-3.5	0.014142136	0.4%	8.5	0.014142136	0.2%	
22	-4	0.014142136	0.4%	12	0.014142136	0.1%	
23	-4.5	0.014142136	0.3%	18.5	0.014142136	0.1%	
24							
25	Focal Length of Diverging Lens						
26	f (cm)	δf (cm)	$\delta f/f$				
27	-5.95	0.041454071	0.7%				
28	-6	0.032015621	0.5%				
29	-5.946428571	0.024737809	0.4%				
30							
31	Average Focal Length						
32	f_avg (cm)	δf_{avg} (cm)	$\delta f/f_{avg}$				
33	-5.96547619	0.034585331	0.6%				
34							
35	UNCERT SUB-CALCS						
36	$\partial f/\partial do$	$\partial f/\partial di$					
37	2.89	0.49					
38	2.25	0.25					
39	1.746173469	0.103316327					