

Data Table

Mass of spring: $m_s = \underline{3.5} \text{ g}$

Mass of weight holder: $m_{wh} = \underline{24.5} \text{ g}$

Determination of spring constant k:

Step	3	4	3	5	5	6, 7
m_w	F	s	ΔF	Δs	k	
Mass of slotted weights	$(m_w + m_{wh})g$	Pointer reading				
grams	dynes	cm	dynes	cm	dynes/cm	
0	24010	0				
50	73010	2.8				
100	122010	5.6	49000	2.8	17500	
150	171010	8.5	49000	2.9	16896.55	
200	220010	11.5	49000	3	16333.33	
250	269010	14.5	49000	3	16333.33	

Average k = $\underline{16765.8}$ dynes/cm

Prediction and measurement of period T:

Step	10, 12	9	9	10	10	11
m_w	M	T_p	T_{50}	T_m	Percent Difference	
Mass of slotted weights	$m_w + m_{wh} + \frac{1}{3} m_s$	$2\pi \sqrt{\frac{M}{k}}$	Measured time for 50 cycles	$= \frac{T_{50}}{50}$		
grams	grams	s	s	s	%	
100	124.83	1.71	26.50	0.53		
150	174.83	1.87	30.72	0.61	430.95	
200	224.83	2.17	35.68	0.71		
250	274.83	2.50				