

**LECTURE 2. HOOKE'S LAW
REPORTS**

Name:.....

Class:.....

1. Purpose:.....

2. Results.

Table 1

Position	Mass (g)	Location of the Mass Hanger Reference in cm		
		Trial 1	Trial 2	Trial 3
Reference				
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Table 1

2. Uncertainty of displacement (Δl): Propagation of error for addition and subtraction

$$\Delta x = \sqrt{(\text{uncertainty in reference})^2 + (\text{uncertainty in location 1})^2}$$

$$\Delta x =$$

3. Force on spring from the hanging mass

$$F = mg =$$

4. Standard Error for Average Displacement for 0.9811N force

$$\text{Standard Error} = \sqrt{\frac{\sum (x_i - \bar{x})^2}{N(N-1)}} =$$

5. Using Hooke's Law ($F = -kx$) to find the spring constant

$$k = -\frac{F}{x} =$$

6. Spring constant uncertainty: Propagation of error for multiplication and division

$$\Delta k = k\sqrt{(\Delta F / F)^2 + (\Delta x / x)^2} =$$

3. Discussion of results

$$\% \text{ difference} = \left| \frac{M_{2\text{theoretical}} - M_{2\text{experimental}}}{M_{2\text{theoretical}}} \right| \times 100 =$$

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$$\% \text{ difference} = \left| \frac{M_{1\text{experimental}} - M_{2\text{experimental}}}{M_{1\text{experimental}}} \right| \times 100 =$$

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$$\% \text{ difference} = \left| \frac{M_{1\text{experimental}} - M_{2\text{experimental}}}{M_{1\text{experimental}}} \right| \times 100 =$$

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