LECTURE 2. HOOKE'S LAW REPORTS

	Name:
	Class:
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L.	Purpose:

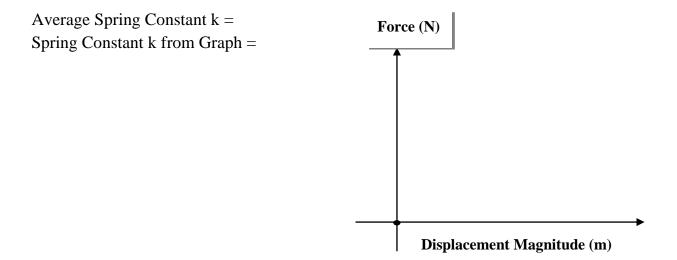
2. Results.

Table 1

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

Table 1

Force	Displacement (x10 ⁻² m)				Constant
(N)	Trial 1	Trial 2	Trial 3	Average	spring (N/m)



Caculation

1. Displacement: the length that the spring is stretched
 x = Displacement = Location with Mass - Reference Location
 x =

2. Uncertainty of displacement (Δ 1): 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

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

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

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

3. Discussion of results

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

.....

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

.....

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