Name:

Partner:

Physics 11
M. Lam

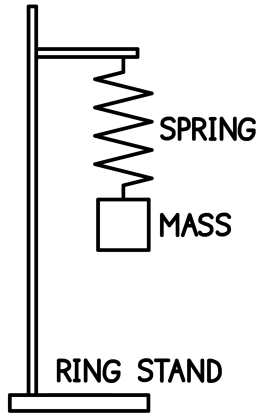
Hooke's Law Lab

Block:

Objective
Determine the spring constant of a spring

Equipment
spring or rubber band
ring stand
ruler or meter stick
hooked weights

Apparatus



Experimental Method

1. Construct the apparatus above.

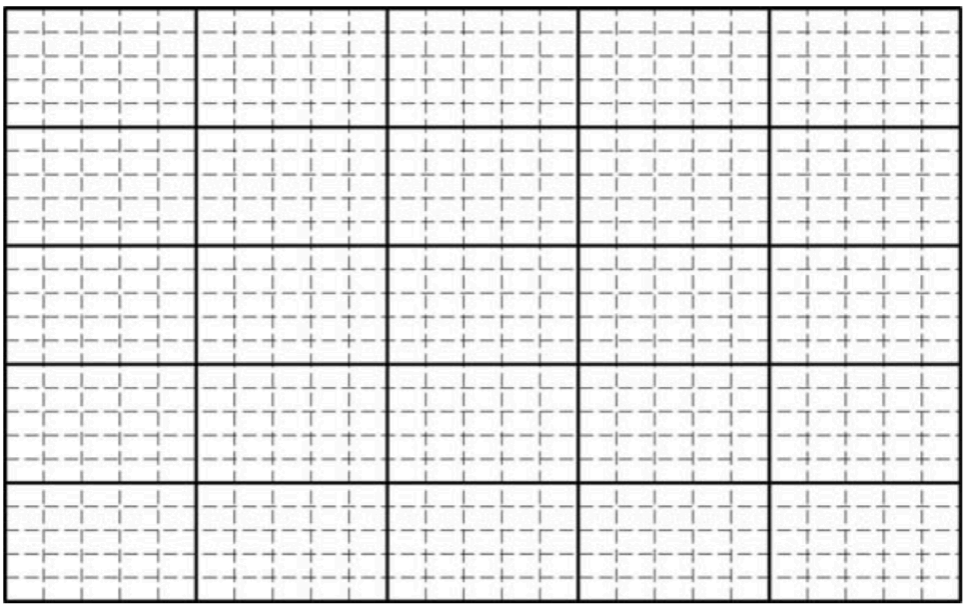
2. Hang a mass on the spring and allow the mass to come to rest. Measure the stretched length of the spring.

3. Complete the table by measuring the spring length for ten different masses.

Mass *m* (kg)	**Spring Length *x* (m)**

Analysis and Discussion

1. Plot the spring length (on the vertical axis) as a function of the mass (on the horizontal axis). Include a best fit line.



2. Determine the slope of the best fit line. Clearly mark the points on the line used to calculate the slope (e.g. with an ×). Be sure to include units.

3. Determine the equation of your best fit line. Write the equation with appropriate variables.

4. Use Newton's first law to write an equation relating the mass m to the length of the spring x. Solve the equation for x. Write the equation symbolically (i.e. with variables, not numerical values).

5. What physical quantity does the vertical intercept represent?

6. Use the slope of the best fit line to determine the spring constant of the spring. *Hint: Compare your answers to 3 and 4.*