7.4 Investigating Weight and Mass

Aim
Investigate the change in gravity force on a force meter or spring balance caused by an increase masses on the spring.
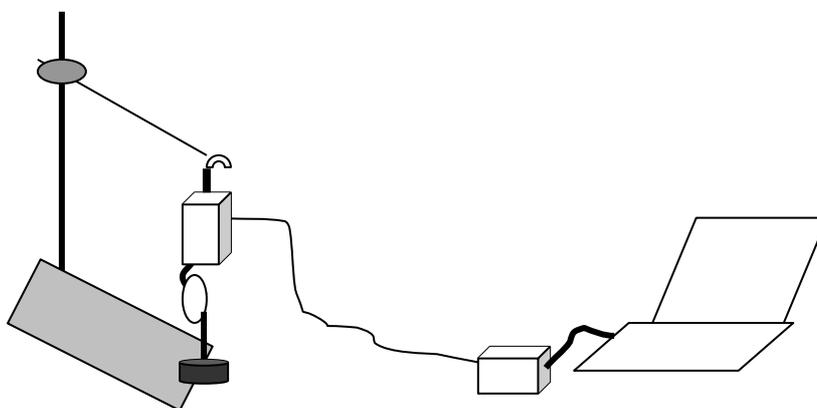
Equipment
A stand (Retort Stand, boss head and clamp)
Set of 50 or 100g weights
Light Spring balance(0-5N) or Force sensor and data logger

Method
You can use a digital or spring balance to take readings or setup a force sensor as shown in the diagram.

1. Hang the balance on the stand and add 100grams on the end. (A hangar usually weighs 50 or 100grams)
2. Measure the Force reading in Newtons and record in results table.
3. Add 100grams at a time recording the weight each time.
4. Finish after 500g.

If using a datalogger:
Zero the sensor first on the data logger.
To setup the reading of the force sensor:
Press the Data Collection in Experiment. Choose Mode: Events with Entry.
The added column is mass in grams.
Now press the START on the screen.
By starting with the hanger (100g) , When the reading settles after adding the weight hit the button next to Start called KEEP.
Now enter the mass in grams. Press OK
It plots a point and is ready for your next reading. Add 50g more.
Continue to 500g.
When finished press STOP.

Results

Mass (grams)	Weight (Newtons)
100	
200	
300	
400	
500	

Plot a graph of the data for Weight (y axis) versus mass (x axis).
Now try to draw through it a line of best fit.

Conclusion from the Graph
How is weight and mass related?

What is the conversion factor? That is if you had a mass in grams what would you multiply by to convert to Newtons?