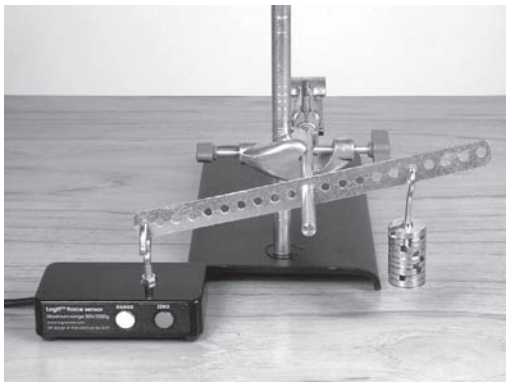
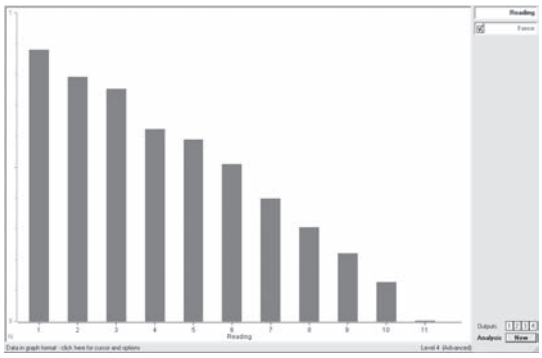
Ideas for other experiments

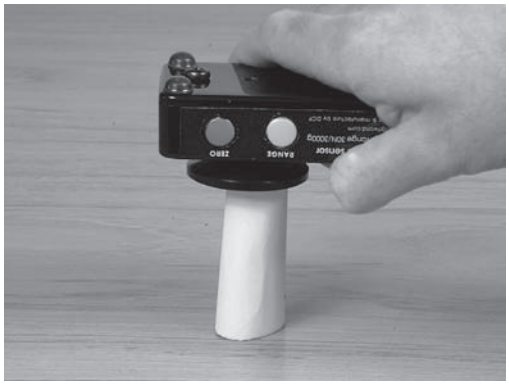
Moments.
By using a piece of metal plate with 1cm spaced holes cut into it and pivoting it in its centre, the law of moments can be investigated.
By hanging different masses on the end of the plate, the resultant force can be shown.
It can be used to demonstrate how levers work in multiplying up the resultant force.

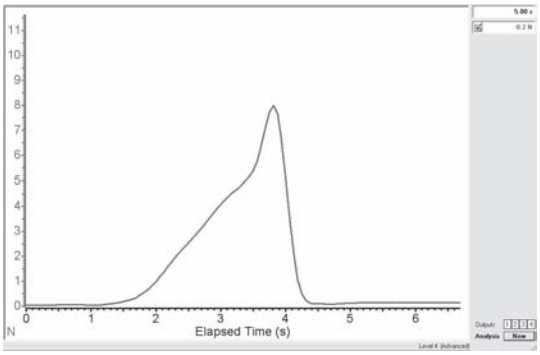




The graph shows how the force is reduced as a 100 gram mass is moved along the metal plate by 1 cm at a time.

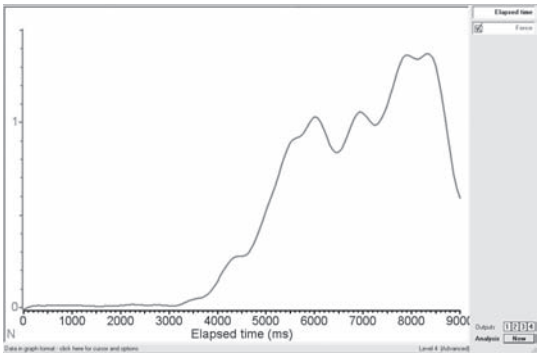
Crushing force.
Challenge students to build small paper models to test the amount of force needed to break such structures.
Bridges could be built as a challenge and different shapes in the construction directly compared.



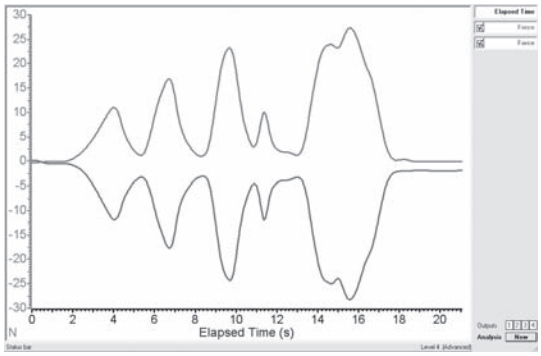


The graph shows a small paper tube being crushed until it collapsed.

Centripetal force.
Place a large blob of modeling clay onto the force plate.
Put the sensor upright onto a rotating chair and give it a spin.
Note: It is suggested that you use a remote datalogger to prevent damage by a trailing lead and that you also attach the logger securely to the chair otherwise it may fly off. You can hold the sensor at arms length and rotate on the spot but care must be taken with this to prevent falling over or injury to by standers.

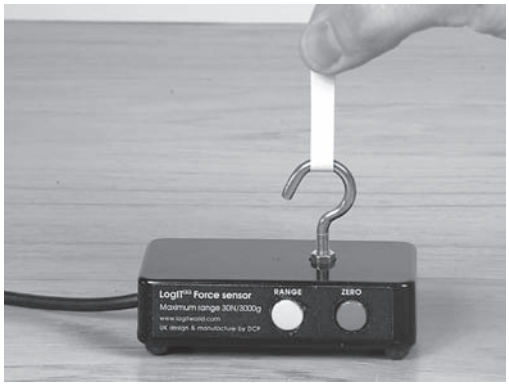


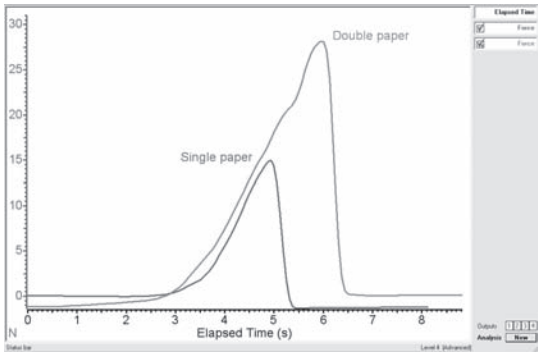
Ideas for other experiments (continued)



Equal and opposite reactions.
Use two force sensors with the hooks.
Link them together and then plot the resultant force as the two are pulled apart.
Note: You will need to invert one of the plots in order to obtain the opposite resultant force.

Tensile strength of paper.
By using thin strips of paper and the hook on the force sensor, the amount of force needed to break the paper can be investigated.
This procedure can be used to investigate the strength of paper with different widths, texture and thicknesses.
We have also had some success using invisible thread used to mend clothing as it stretches and breaks before over ranging the force sensor.





Note: For clarity, the photo does not show the force sensor being held by the other hand to counteract the upward pull of the paper.

Lift movement.
By attaching a large blob of modeling clay to the force plate and placing the sensor on the floor of a lift, the resultant force on the clay can be shown and the movement of the lift plotted.
If the mass of clay used is known, the acceleration and deceleration of the lift can be calculated using the formula F=Ma (where F = Resultant force, M = Mass of clay and a = the acceleration)

Use the Force sensor as a Balance
You can also use the LogIT force sensor as a simple top pan Balance by fitting the force plate and laying it on a flat table or bench LogIT Lab and similar software has scale options to change the default Newtons scale to +/- 300g with a resolution of 1g or +/- 3Kg with a resolution of 10g.