Experiment 6:   Bending of a loaded meter rule

To investigate the behavior of a loaded ruler

Materials and Apparatus

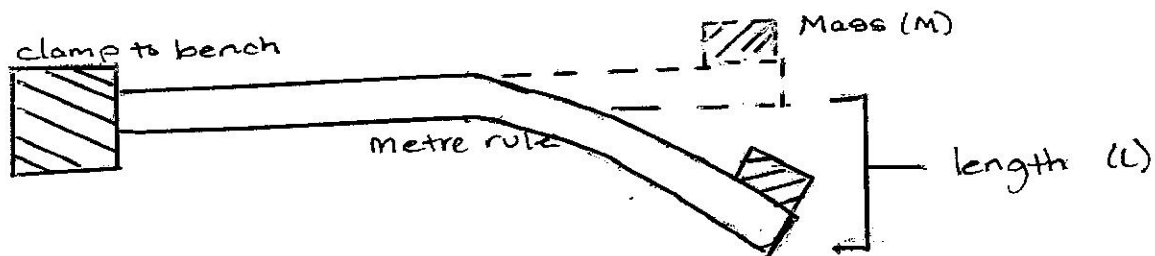2 Metre Rules

Retort stand

Masses

G-clamp

Two pieces of wood

Plasticine

Optical pin

Diagram:

a) Attach the metre rule to the table, using two pieces of wood and G-clamp at a length of 90cm (Y_{90}). Attach the optical pin to the free end of the metre rule using the provided plasticine.
b) Record the original height of the system using the second metre rule.
c) Apply a desired mass to the end of the clamped rule and record the heights.
d) Repeat the above procedure, increasing the mass each time. Do this for a minimum of six (6) readings.
e) Repeat the experiment using the length of 80cm (Y_{80}).
f) Calculate the extensions for both Y_{80} and Y_{90}.
g) Plot a graph of Y_{90} vs mass and Y_{80} vs mass. Graph **MUST** be plot on the same axis.
h) Determine the gradient of each line and state the percentage error (uncertainty).
i) Find the ratio Y_{90} between Y_{80}
j) State precautions and errors for this experiment