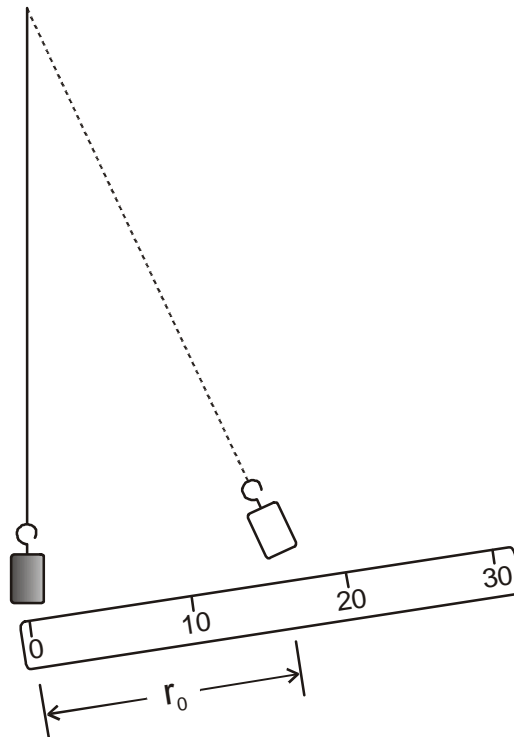


Observing the Damping of the Motion of a Simple Pendulum

1. **Preparation:**
 - a) A “damped” oscillation is one in which an external force causes the *amplitude* to decrease. The damping of the motion of the pendulum is due to air resistance. Why is it reasonable to expect that the average magnitude of the force of air resistance acting on the bob will depend on the amplitude of the oscillations ?
 - b) Read about the basic properties of exponential graphs.
2. Set up the apparatus as shown below. A 5 g or 10 g mass will be found suitable for the pendulum bob. Length of pendulum about 40 cm.



3. Start the pendulum oscillating with an initial amplitude (r_0) of about 15 cm. Allow the pendulum to oscillate and estimate the amplitude of the oscillations after 10, 20, 30 etc oscillations.
4. Plot a graph of amplitude against number of oscillations. Try to prove that this graph is (approximately) exponential.