19th September

1. A simple pendulum is set up with a 50 g mass on a thread.

   The length of the pendulum, *L*, should be 400 mm.

   a. Describe how an **accurate** measurement of *L* could be taken

   The bob is displaced exactly 30 mm to the left and then released.

   b. Describe how this distance of 30 mm could be reliably **repeated** so the pendulum is released from exactly the same point each time

   c. State the effect on the **time period** if the pendulum was released from an initial amplitude of 10 mm rather than 30 mm
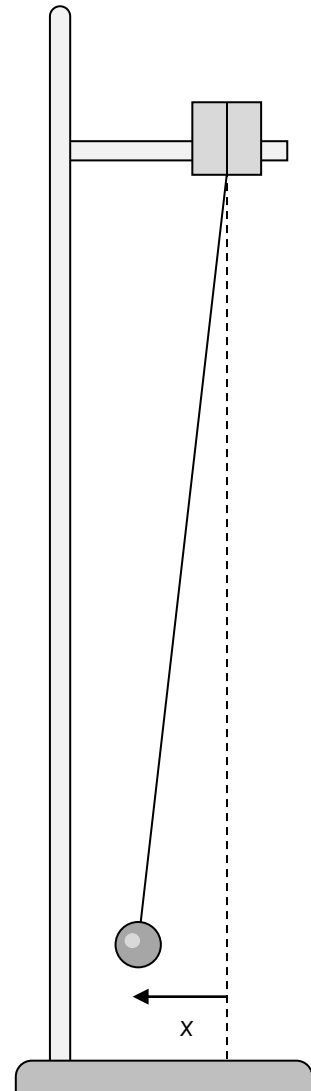
   d. Describe the **energy transfers** that take place as it oscillates from side to side

   The time for ten oscillations is recorded as 12.62 seconds.

   e. Calculate a sensible value for the **percentage uncertainty** in the time period for one oscillation

19ᵗʰ September

The velocity-time graph of the pendulum as it undergoes simple harmonic motion is shown below.

f.   Sketch the shape of the corresponding **kinetic energy-time** graph with suitable values