



## Physics

## PHY6T/P11/task

Unit 6 Investigative and Practical Skills in A Level Physics  
ISA (P) SHM Oscillations of a spring

### Stage 1: Task Sheet

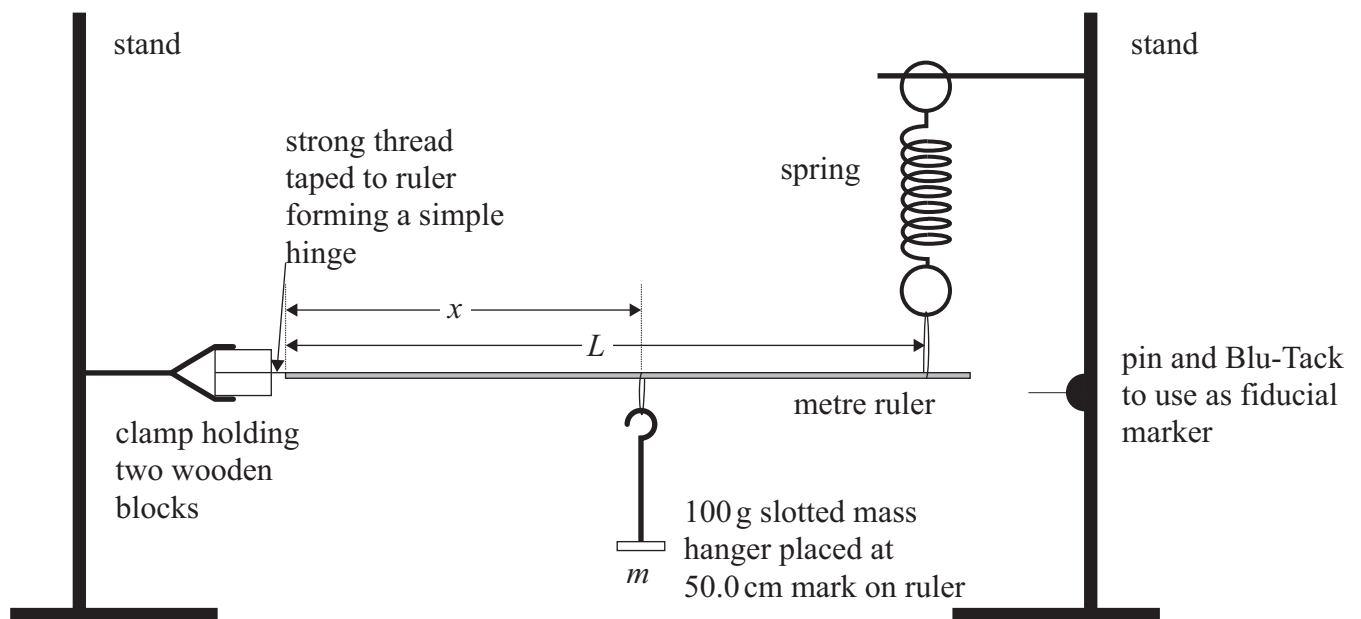
**This task is worth 8 marks**

*You are advised to read through these instructions before beginning your work.*

**You are going to investigate how the time period of the oscillations of a ruler, which is supported by a spring, varies when different masses are suspended from the ruler.**

- Set up the apparatus as shown in **Figure 1**. The threads taped to the ruler should be held firmly between the two wooden blocks so the ruler is free to pivot about this end. The spring should support the ruler 10.0 cm from its free end.
- Adjust each clamp so that the ruler is horizontal and the spring is vertical.
- The mass,  $m$ , should initially be the 100 g slotted mass holder and be supported at  $x = 50.0$  cm. Keep both  $L$  and  $x$  constant throughout the experiment.
- Depress the free end of the ruler slightly and release it so that it oscillates vertically.
- Take suitable readings to determine the time period,  $T$ , of the oscillation.
- Add a 100 g mass to the mass holder. Adjust the clamp so that the ruler is horizontal and the spring is vertical. Measure the time period of the oscillation. Repeat the procedure up to a total mass of 700 g.
- Record your results in a suitable table.
- Draw a graph to show how  $T^2$  plotted on the vertical axis varies with total mass,  $m$ .

Figure 1



### After the investigation

At the end of the investigation, hand in all your written work, including the graph of  $T^2$  against  $m$ , to the supervisor.

This documentation will be required for Stage 2 of the ISA. Ensure that you have entered your centre details, candidate number and name on all the sheets you have completed.