AQA

General Certificate of Education
Advanced Subsidiary Examination
June 2012

Physics   PHY3T/Q12/task

Unit 3   Investigative and Practical Skills in AS Physics
ISA (Q)   Projectiles
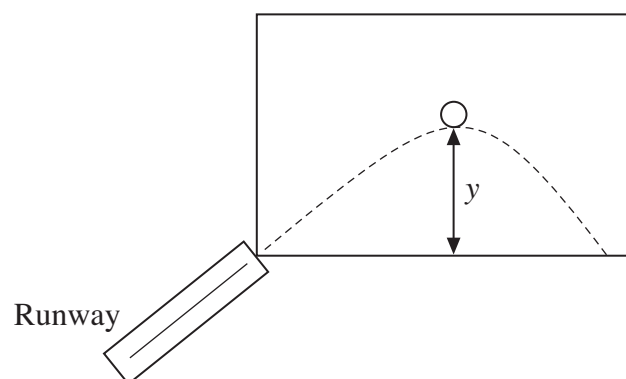
Stage 1: Task Sheet

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 distance a marble rolls down a sloping runway affects the maximum distance it can then travel up a sloping board.

- The apparatus consists of a V-shaped cardboard runway attached to a sloping drawing board to which is pinned a sheet of A3 paper. **Keep the drawing board tilted at the same angle throughout the experiment.**

- The runway has six lines drawn on it at distances, *d*, equal to 30, 50, 70, 90, 110 and 130 mm from the bottom end.

- Ensure the runway is lined up with the 45º line in the left-hand corner of the A3 paper.

- Place the marble on the runway with its centre on the 130 mm line.

- Release the marble, and note the maximum distance, *y*, travelled up the drawing board, as shown in **Figure 1**, over the page. This should be measured to the bottom of the marble. This distance needs to be about 130 mm. If necessary, adjust the slope of the runway, and repeat this trial until the distance is about 130 mm. **Keep the runway tilted at this angle throughout the experiment.**

- Find the maximum distance, *y*, rolled up the board with the marble starting from each of the six different distances, *d*, shown by the lines drawn on the runway. You can make marks on the A3 paper as required.

- You should take a minimum of three readings of *y* for each value of *d*.

- Record your results in a suitable table.

- Plot a graph of *y* on the vertical axis against *d*.

Turn over ▶

Figure 1

After the Investigation

At the end of the investigation, hand in all your written work, including the graph, 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.