



General Certificate of Education

Mathematics 6360

MM1A Mechanics 1A

Report on the Examination

2008 examination - January series

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Written Component

General

The paper seemed accessible to the great majority of candidates.

The paper contained some questions where the answers were given and the candidates were expected to obtain this result. For all of these questions there were a number of candidates who did not show enough working to justify their answers. It is important that candidates show all of the steps that are required to convince examiners that they have obtained the printed result.

Question 1

While there were many good responses to this question, candidates did make some errors and some did not show enough working in part (a). In part (b), there were a number of incorrect approaches. These included:

- Simply calculating the weight
- Calculating the magnitude of the resultant force using $F = ma$
- Making a sign error by producing an equation such as $70g - T = 70 \times 0.64$

Part (c) was usually done well, although a few candidates did not appear to know how to calculate the average speed.

Question 2

There were many good responses to this question and a lot of candidates gained full marks, particularly for part (a). The most common error seen was to give an answer of 53° . This was often accompanied by a diagram that showed an incorrect representation of the velocities.

Question 3

This question caused more difficulties. There was a large number of poor force diagrams. The most common errors were to include a reaction force and to show the two tensions as equal, by using the same letter to indicate the magnitude of each tension. In part (b), there were candidates who did not show enough working to obtain full marks. Reasons for this included not showing a trigonometric term such as $\sin 30^\circ$ or $\cos 60^\circ$ and not showing how the value of 78.4 was obtained from the candidate's initial equation. A few candidates tried to resolve the weight instead of the tension. Candidates did find part (c) easier, with some candidates only obtaining marks on this part of the question, using the printed result in part (b).

Question 4

There were many good responses to this question. Parts (a) and (b) were often both done well, but a small number of candidates did not include the mass when forming their equations.

Question 5

Most candidates did well on this question, having few difficulties finding the magnitude of the friction force. In part (b), the great majority of candidates took a correct approach to finding the acceleration. There were a few candidates who did not consider the block and the particle as two separate bodies. Part (c) was done well with candidates experiencing very few difficulties.

Question 6

Some candidates found it very difficult to form a correct quadratic equation based on the vertical motion of the pellet. One of the main difficulties was dealing with the sign of the number 3. Many candidates did part (b) well, and some who had been unable to find the time were able to use the printed answer to calculate the range. Parts (c) and (d) were found more challenging by

candidates. While there were a few very good solutions, many candidates did not realise how to obtain the required answers, especially in part (d).

Question 7

In this question the use of vector notation by some candidates was quite poor. Part (a) was done well by a good number of candidates, but some did not show enough working to gain full marks. Typical problems were not showing that their equation was derived from $\mathbf{v} = \mathbf{u} + \mathbf{a}t$ and not showing the division by 40 clearly. Some candidates did well with part (b), but there were quite a lot of arithmetic errors. Some candidates used an incorrect initial velocity, for example $4\mathbf{i}$ instead of $5\mathbf{j}$. Part (c) proved to be too demanding for the majority of the candidates, although some were able to gain a few marks. One of the most common errors was to work with position vectors rather than with velocities. For those who did work with velocities, creating an equation to find the time when the Jet Ski was travelling south east was found to be difficult. Quite a number of the candidates who got this far had equations that lacked a minus sign.

Coursework Component

A number of scripts had little marking on them or were marked in pencil. Scripts should be marked in red pen and calculations checked for accuracy (and indicated as such on the scripts).

All work should be dispatched in appropriate AQA stationery.

All Candidate Record Forms must be signed by the candidate and the teacher responsible for the assessment of the script.

In 'other areas of work' candidates should quote other tasks **not specific to or modifications of their task** which would use similar skills and techniques to those used in their task.

There was little work submitted in this series, but the general standard was good and the scripts were appropriately assessed.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the [Results statistics](#) page of the AQA Website.