



General Certificate of Education

Use of Mathematics 5351

UOM4/2 Applying Mathematics Paper 2

Report on the Examination

2008 examination - June series

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Dr Michael Cresswell Director General.

General

There were some good responses to this paper with the majority of candidates being able to gain some credit across all questions. It was pleasing to see a relatively better response than in previous years to the question concerning the cosine function. There is evidence that candidates are really able to engage with, and understand, how the mathematics models different real situations. Many also show that they can present their work with care being paid to correct use of notation and some clarity in their mathematical argument. This should continue to be encouraged as credit is given for this.

It seems clear that many candidates are using their graphic calculators effectively, and this is also to be encouraged, although in many cases more care should be taken in presenting sketch graphs.

Question 1

This question required candidates to work with linear and quadratic functions to model the motion of a tennis ball. In general, across the different parts of the question, the response was good with candidates effectively working within the context of projectiles. Part (a) was more straightforward than Part (b) and this was reflected in candidates' responses. In Part (b) (ii) candidates took a range of approaches to demonstrate that the ball lands outside of the court demonstrating real engagement with and understanding of the situation.

The sketch graph required in Part (b) (iii) was not always completed satisfactorily. Candidates should be advised to use their graphic calculators to make sure that they get an accurate representation and then give enough information on their sketch so that a reader can understand the key features of the situation. Here, for example, it is important to give intercepts of the curve with both axes.

Question 2

As in previous years the overall response to the recurrence relation question was good with many candidates making substantial progress.

Part (b). Some candidates found the cost for hiring a barge for each of the first four weeks but failed to add these to find the total cost.

Part (c). Although the vast majority understood how the coefficients in the recurrence relations related directly to the percentages of barges, some failed to understand this and attempted complex calculations to find the required values.

The final parts of the question were answered well by many, with evidence that candidates were thinking carefully about how the recurrence relations were attempting to reflect reality.

Question 3

This question which required use of a cosine wave was answered well by many candidates.

Part (a). Careful reading of the question was required to ensure that the correct value of n was substituted into the expression. However, the tricky part of this question for many was the conversion of a decimal value of time into hours and minutes.

Parts (b) and (c). In these parts of the question the identification of the required values was not problematic, but many candidates were not able to express clearly their interpretation of the situation these values reflected.

Part (d). In general, candidates should take more care when sketching graphs. Here it was important that the cosine wave should indeed look like such and in this particular case one complete cycle should be drawn with maxima and minima clearly identifiable.

Part (e). Many candidates scored well on this part of the question with a range of different approaches being evident. Some used their graphs (possibly their graphic calculators) to state the correct values and others worked with the function and solved the equation $6 + 2\cos n^\circ = 7$. It was pleasing to see that many candidates gave the two possible values of n .

Question 4

Overall, many candidates made a good attempt across all parts of this question.

Part (a). Although it was clear that candidates knew why they had identified the correct probability in part (i), not all were able to express this clearly in words.

Part (d). A substantial number of candidates continued to work with information for winter flights in this part of the question rather than summer flights as was required. Such responses were only partially penalised, but candidates should take care to read the question carefully.

This part of the question required candidates to engage carefully with the context and consider the effect of adding the £25 extra charge to some of the sales of seats. Many coped well with this but it did cause problems for a substantial number of candidates.

Part (e). Almost all responses to this final part of the question, which asked for one way in which the simulation could be improved, suggested ways in which more money could be made rather than focussing on how the simulation might better reflect reality. As in previous years, candidates should reflect on the limitations of the given simulation by thinking about the assumptions that were made in setting it up.

Mark Ranges and Award of Grades

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