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AQA

**General Certificate of Education
June 2011**

Mathematics Advanced Level   **UOM4/1**

(Specification UOM4/1)

Applying Mathematics Paper 1

Report on the Examination

General

The pre-release material provided a substantial amount of data from which candidates were expected to select appropriately during the examination. Mathematically, the focus was on a number of recurrence relations, which although arithmetically quite complex, were ultimately straightforward; together with exponential functions that could be used to model weight loss. A number of candidates lost marks by making careless. Noticeably, some candidates misinterpreted the recurrence relation notation, taking the '-1' in the subscript (w_{n-1}) to mean $w_n - 1$, and others did not give a sufficiently clear enough sketch graph. In general, trial and improvement methods should be discouraged: candidates should aim to demonstrate some algebraic facility when solving equations.

Question 1

This question required candidates to select from the pre-release material and work with the two (simple and complex) methods for calculating daily calorie needs. Many candidates were able to do this successfully although a substantial minority were not careful enough in selecting the correct numerical values associated with the appropriate method. In part (b) many candidates were unable to work successfully with T as a variable and consequently did not obtain the correct linear relationship.

Question 2

Although a simple model of direct proportion was required many candidates were unable to proceed. A strategy that might have been useful would have been to think about what they would do for a specific case, perhaps for Ben (who was used as an example in the article) and then to generalise from this.

Question 3

In part (a), candidates were required to *show* how the recurrence relation was arrived at in the case of Ryan. It was important to show some arithmetical steps used to obtain the correct equation. The majority of candidates worked correctly with the resulting recurrence relation although a number interpreted the notation w_{n-1} as $w_n - 1$.

Question 4

Although many candidates were able to work towards solving the required

$$81 = \frac{2500 - 580e^{-0.0031t}}{24}$$ analytically, a substantial number used trial and improvement, graphical or calculator 'solver' methods. Only fully accurate answers gained any credit for these latter methods. Candidates should be encouraged to show all intermediate steps in their working.

Question 5

The majority of candidates were able to use data from the article to answer this question correctly, although a number were not sufficiently precise in stating the activity and the time for which it should be undertaken.

Question 6

The first part of the question was answered accurately by many candidates, but far fewer were able to sketch and interpret the graph as required in parts (b) and (c). When sketching a graph candidates should show its significant features clearly, in this case, the intercept on the vertical axis and the asymptote, in addition to making the general shape clear. A disappointingly low number of candidates were able to give any meaningful interpretation of the shape of the graph in terms of Ben's weight.

Mark Ranges and Award of Grades

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

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