LEVEL 3 CERTIFICATE
MATHEMATICAL STUDIES

1350/2C Paper 2C Graphical Techniques
Report on the Examination

1350
June 17

Version: 1.0

Further copies of this Report are available from aqa.org.uk

General

While there were some good responses to the questions, there were several questions where few students demonstrated a good approach. On some questions, the students tended to try to explain why a result was true rather than using mathematics to justify their argument. Also there were times when the students did not focus on the quantity that the question was asking about; for example, when asked about an acceleration the students described the speed rather than the acceleration.

Question 1

This question was done well by most students, with many gaining a good number of marks. In part (a) some students linked their suggestions for the improvements to their errors, which was a very efficient way to answer the question. Some others tried to find improvements that did not relate to their errors which was a harder way to answer the question. Part (b) was generally done well, with a few students making minor errors.

Question 2

The students experienced quite a number of difficulties with this question. It seemed that they found it hard to extract appropriate information from the preliminary material. The number of correct responses for part (a) was quite low. In part (b), there was a tendency for the students to give written answers that were not supported by any calculations. Questions of this type do require numerical calculations to determine whether or not claims are valid. Of those who did provide numeric work for the Always Young claim, many worked with the number of unemployed rather than considering the rate. There were very few good responses to the Dynamic Youth claim. Very few students realised that they needed to use the percentages given in the last section of the preliminary material. Those who did, often gained a number of marks, although some found, for example, 15.2% of 362000 instead of working out the total number of men. In part (c), many students gained one or two marks, but very few were able to give three acceptable suggestions.

Question 3

Part (a) of this question was done very well by the students, with few errors seen. Part (b) proved more problematic. Relatively few students realised that the acceleration corresponded to the coefficient of t in the equation that was given in the question. Many tried to calculate the acceleration by considering the change in speed in this period of time. There were few good descriptions of the change in acceleration. However, many students described the speed instead of the acceleration.

Question 4

This question tended to be done either very well or very badly, with students gaining a good number of marks if they started off on track. In part (a), many students were able to recognise that the value of c was 4, but were often unable to complete the algebra required to find the value of a. Quite often the equation $5 = a \times 2^2 + 2 + c$ was seen, but was not followed by a valid attempt to find a using the students value of c. In part (b), some students substituted the value of 6.5 into their expression for y and obtained a value that could be considered. However some obtained the correct value of -0.0625 and concluded that this indicated an underestimate, as it was negative, and did not really consider the implications of this value.

Question 5

In part (a), only a few students provide evidence of drawing a tangent at $t = 2$ and finding the gradient of this. Many students found the gradients of other lines. A common example of this was to join the points at $t = 1$ and $t = 2$ and find the gradient of this line. There were a number of other examples, including finding the gradient of a line between the first and last points. There were very few good answers to part (b), as many students described what was happening to the radius rather than the rate of change of the radius. Part (c) was done very well, with a very high success rate. In part (d), there were many good responses, but common errors were to give an answer of 40, because the students did not divide by 2, or 21, where the students divided the volume at $t = 4$ by 4 rather than the change in volume. There were very mixed responses to part (e). Some students drew good graphs or tables and easily obtained the correct time. Other students were either unable to draw suitable graphs or did not make a serious attempt at the question.

Question 6

This question proved to be more demanding than the earlier questions on this paper. In part (a), there were a good number of correct responses, but the answer 6 was also seen a number of times. In part (b), many students assumed that $A = 5.70$ at the start and ended up with a sort of circular argument. Those who substituted $t = 1$ into the first formula usually gained at least 2 marks and often went on to complete the argument and gain full marks. The sketches seen in part (c) were very variable in quality. Many showed that the charge increased and decreased, but very few used appropriate exponential shapes. Some students did indicate the maximum value of 5.70, but this was not seen very often. There were very few good responses to part (d). A very common incorrect response was to find 60% of 2 and then find Q at this time. Some students realised that they needed to find the times when $Q = 4$. A few were able to form and solve equations, but a more common approach was a trial and improvement approach which could produce correct answers if implemented effectively.

Use of statistics

Statistics used in this report may be taken from incomplete processing data. However, this data still gives a true account on how students have performed for each question.

Mark Ranges and Award of Grades

Grade boundaries and cumulative percentage grades are available on the Results Statistics page of the AQA Website.