Level 3 Certificate
MATHEMATICAL STUDIES

Paper 2C Graphical techniques
Report on the Examination

1350
June 2018

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General

The majority of the students seemed to be well prepared for the examination this summer and there were far fewer blank responses to question than in previous series.

Question 1

There were some good responses to question 1(b), but very few students gained full marks. Many students did make comments about the labelling of the axes although they had been instructed to give other improvements in the question. In some cases, the students suggested improvements to the data that was included rather than to the graphs. A few students made criticisms of the graphs but did not include suggestions for associated improvements.

There were many good responses to question 1(c), with a variety of methods being used by the students. Some students included correct calculations but did not state their conclusion. There were a number of arithmetic errors in the responses of some students.

There were many good responses to question 1(d), with a reasonable number of students gaining full marks, from a wide variety of different approaches. Some students produced appropriate calculations but did not state their final conclusions. There were arithmetic errors present in the work of a number of students and also some inappropriate rounding. For example, when considering Tim's claim, it was not uncommon to see 27.8 rounded to 27 and, for Larissa's claim, 51.03 was often rounded to 51. When working with Larissa's claim, some students added 2 000 000 to 16 141 241 but did not add this to the total number of votes, leading to an incorrect final answer.

Question 2

There were some good responses to this question, but there were many students that gained 4 marks due to the incorrect application of the 10% decrease in the exchange rate from the May 2014 level. Often this resulted in the students multiplying by 1.10 rather than dividing by 0.90. They usually carried out the other steps correctly.

Question 3

Part (a) was done very well and there were very few incorrect responses.

In part (b), the value zero was sometimes missing, but with the other two values stated correctly. A few students stated the distances instead of the times.

There were some good responses to part (c), where students clearly drew a tangent and found its gradient. Some were hampered by poor, often very short tangents or reading values from the graph incorrectly. There were a number of students who found the average speed for the first 30 seconds.

There were some good responses to part (d) but many students found this part more challenging. Some used incorrect pairs of values for s and t. Others wrote down a correct equation, but were unable to solve this to find the value of k.

Question 4

There were a lot of good responses to part (a), but some students did not use the correct values from the table.

There were some very good answers to part (b). The students who realised that they needed to draw a horizontal line on the graph at the average speed usually gained several marks. The main reason for not gaining full marks was usually that they did not read accurately from the graph. A few students found the correct times but divided by 123.2 rather than the time of the competition window. Some students drew a horizontal line, but either much too high or sometimes too low. There were a number of students who could not come up with a reasonable strategy to tackle this question.

The students found part (c) very challenging and there were very few correct answers. Of those who did state that there were 5 times, only a few were able to give reasonable justifications. The most common answer to this question was 3, which was related to the number of peaks on the graph.

Question 5

In part (a), many of the students described what was happening to the height of the candle rather than the rate of change of the height. This made it very difficult for them to gain any marks.

There were very few correct solutions to part (b). There were a number of students who used ± 0.39 in their working but often did not realise that this related to the value of m. Also, some students obtained 7.488 but did not realise that this was the value of c. Similarly, some students obtained a value of 12.8 but were not able to use this to find T.

The students found part (c) very challenging and there were very few correct solutions. Many students did not attempt to use the value of 0.39 and as a consequence were unable to gain any marks. Those who did use 0.39 often gained some credit for this question.

Question 6

Almost all of the students answered part (a) of the question correctly.

There were a number of correct responses to part (b), but many of these were obtained by using trial and improvement methods rather than logarithms. Some students were able to write down a correct equation but were unable to solve it.

Many students were able to draw a reasonable graph in part (c), although there were some that clearly passed through the origin. Many students stopped at this stage and did not attempt to find a rate of change. A reasonable number did find an acceptable value for the rate of change, but quite a few were hampered by poor graphs or misreading their scales.

There were a lot of blank responses for part (d), but there were also some good responses. Many students doubled the value of 3000 from part (b) and found a time for 6000 or used a value from the table in part (c) and doubled this. Again, trial and improvement was a very common approach. Quite often the students would find the time for the doubled number of views but did not subtract the time for their original value so that they did not find the time for the actual increase.

Mark Ranges and Award of Grades

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