

Version



**Free-Standing Mathematics Qualification
June 2012**

Mathematics Advanced Level 6990

(Specification 6990)

Using and Applying Statistics

Report on the Examination

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FSMQ Advanced level – Written paper

General

The paper was accessible to all candidates but there were also some more challenging questions for the more able candidates. The mean mark was towards the mid 30s and it was clear that most pupils had been well prepared. There were some very good scripts.

The use of a calculator is to be recommended but candidates need to check their data entries and be aware that a wrong answer with no method shown will get zero marks. Some candidates lost marks for not giving answers to the required degree of accuracy, normally three significant figures.

Interpreting statistical measures in context caused difficulty for many candidates. The pre-release data sheet gives an opportunity for candidates to be aware of the context and then use and apply the statistical skills in the examination.

Question 1

This was a fairly simple opening question with almost all candidates gaining some marks. Occasional errors were caused by careless reading of the question. Many candidates lost marks by drawing inaccurate bars.

Question 2

This question was reasonably well done. Part (b) caused some problems for candidates trying to find the angle for **Paper and Card** for a pie chart.

Question 3

There were very few fully correct responses. Most candidates picked the correct columns and were able to plot the points for the scatter graph and find the statistical measures. Only a few candidates were able to interpret the value of r in context – an increase in goals scored suggests an increase in points.

Part (c) was not done well with many candidates drawing the line by eye despite having found the equation for the line of best fit. Some well prepared candidates did use the mean point and another calculated value or the y -intercept for their line. Interpreting the value of a in context again caused problems but the more able candidate was able to conclude that for every goal scored there would be an increase of 1.05 points.

Part (d) was not answered by the majority of candidates even though it was a relatively straight-forward question.

Question 4

Well prepared candidates did reasonably well on this question. Some candidates used the wrong upper class boundaries for their plots. Misreading the horizontal scale, when finding the quartile values, was another common error. Few candidates could answer part (d) correctly. The question asked for the **age** and **gender** of people divorcing in 2008 to be compared by using the median and interquartile range values. Few candidates appeared to understand that the interquartile range referred to the spread or variation in the ages of people divorcing.

Question 5

Many candidates answered this question well. The percentage questions in part (a) were standard. Part (b) was a different type of question as the candidates had to decide how to use the given grid and it was pleasing that the majority did choose sensible scales and plotted their points accurately. Describing the trend for the number of divorces was generally done well.

Question 6

This was a more challenging question. Part (a) was straight-forward though a number of candidates failed to realise that the number of complete jars was needed for the answer. At this level, errors in changing kilograms to grams are not expected. Many centres had taught the normal distribution and candidates were able to gain marks on part (c). Part (d) was difficult, as it involved finding the new mean, and there were few correct responses. Some candidates tried to use their calculator but failed to spot that the z value must be negative in order to get the required answer.

FSMQ Advanced level – Portfolios

The standard of portfolios submitted for this award was generally very credit worthy with most centres following the Specification carefully. Working with Algebraic and Graphical Techniques was the most popular unit followed by Using and Applying Statistics and Using and Applying Decision Mathematics.

Generally centres encouraged their candidates to produce portfolios which showed independent work and realised for a high mark in Strand One initiative must be demonstrated in the development of the investigation. Some centres, however, did not appreciate that if a portfolio is incomplete scaling of marks must take place as indicated in the Specification.

It was pleasing to see that most centres encouraged their candidates to validate their work by carrying out a thorough range of 'checks'. However, the candidates from some centres did not produce work of the correct standard, this was particularly apparent in the Statistics unit where often only core material was developed. Some candidates did not produce "A report of fitting a function to non-linear data by plotting a linear function" for the Algebra unit and so could only be awarded a maximum mark of 24.

There were some very exciting portfolios which were rightly awarded a high mark, the assignments had been developed independently and the conclusions had included an explanation of how the initial data affected the findings. It should be remembered, however, that for a high mark in the Statistics unit, work on tests of significance, Mann Whitney test, Wilcoxon signed rank or similar topics must be seen. Similarly, in the Calculus unit integration/differentiation of more advanced functions must be attempted if a high mark is to be awarded.

The provision of samples was very efficient and most centres provided detailed comments on the Candidate Record Forms which greatly assisted the moderation process.

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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