



Examiners' Report Principal Examiner Feedback

Summer 2025

Pearson Edexcel GCE
Further Mathematics (8FM0)
Paper 24 Further Statistics 2

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Introduction

The vast majority of learners were well prepared for this paper and made progress on all the questions. The final parts of questions 1, 2 and 3 and the final 4 marks of question 4 were more challenging and offered some discrimination.

Question 1

Part (a) was answered very well with many correct answers seen. Some made slips in their ranks and a few didn't use the correct formula. In part (b) many identified that there were some tied ranks but they didn't always explain how to deal with these. Many learners knew that for tied ranks one should use the product moment correlation coefficient formula but they didn't always clearly state that this formula should be used on the ranks not on the original data.

Question 2

Whilst many gave the correct answer to part (a) there were a number who thought the answer was 0.2 instead. However the calculation of the mean was answered very well and many also went on to find the correct value for $\text{Var}(X)$ as well. In part (c) most learners drew a straight line and usually this had a positive gradient though some started below the x-axis and some passed through the origin. Those who had a more promising line usually labelled the point $(-3, 0)$ but many failed to label the end point $(2, 1)$ but the intersection with the vertical axis was often given correctly. Part (d) proved more challenging and a common response from those who attempted it was simply to find $P(X > 1.4)$. Those who did consider the negative square root often went on to find the correct probability but some found $P(-1.4 < X < 1.4) = 0.56$ instead.

Question 3

This question was answered well by virtually all the learners. In part (a) very few learners failed to show us some working before arriving at the printed answer and most used this value, along with the other values in the question to complete part (b) correctly too.

For the hypothesis test in part (c) some didn't give their hypotheses in terms of ρ but very few attempted a tw-tail test. Most used the correct critical value from the tables with only a small minority giving the Spearman's critical value. The most frequent cause for losing marks here was over the conclusion. Many gave a correct comparison such as $-0.667 < -0.3783$ and went on to state that there was evidence of a negative correlation. Such a comparison was not required but if attempted it should be correct so those who stated $-0.667 < 0.3783$ for example lost the final mark.

Part (d) was answered well but a few learners did not work with sufficient significant figures to find the value of a to 2 decimal places and a few cases of 8.43 here lost the accuracy mark. Part (e) was answered very well and most secured both marks here.

In part (f) some simply substituted the BMI values into their equation from part (e) and wrongly concluded the B had the greater average speed and so B was the quickest and took the shorter amount of time. Others realised that the residuals should play a part but had the wrong signs when appending these to their equation. A good number though found suitable values for the average speeds but seemed to forget that their values for v_A and v_B were speeds and not times and therefore picked the incorrect runner.

Question 4

Most learners knew that they needed $F(2)$ for part (a) and usually were able to find a correct expression in terms of a and b though sometimes there was a sign error with $16a - 4b - 1$ occasionally seen. A few attempted $F(4) - F(2)$ and made no progress in part (a). The vast majority knew that to find the probability density function (pdf) they should differentiate the cumulative distribution function (cdf) and this was usually carried out correctly. A few failed to define their pdf for all values of t and some integrated the cdf.

Part (c) proved a fitting discriminator for the end of the paper. Many knew that they needed a second equation in a and b and most of these students realised that using $F(4) = 1$ would give them a suitable equation. Those who found this second equation usually went on to solve correctly and find the correct values for a and b . Some were stumped at this point but a good number realised that they needed to differentiate the pdf and find a turning point. Those who made this step usually arrived at a quadratic expression which they set equal to zero and then set about solving. There were occasional arithmetic slips made in this process but a good number found the two solutions $t = 4$ and $t = 4/3$ and many then gave thorough checks that $t = 4/3$ gave the maximum before clearly selecting this value as the mode.

