

FSMQ 2005

January Series



ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Report on the Examination

Free-Standing Mathematics Qualifications

- 6981 Managing Money
- 6983 Making Sense of Data
- 6984 Calculating Finances
- 6986 Handling & Interpreting Data

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Coursework Portfolios

Foundation

The majority of portfolios were appropriately assessed by centres. Most of the discrepancies in standard arose when the centre's marks did not fully reflect the fact that for a grade A to be awarded on their portfolios (i.e. marks above 39), candidates had to demonstrate a high standard of work. In theme two it is necessary for the portfolios to be concise. It is also expected that all the requirements of the portfolios be included and it was rare to see work on fractions. The use of fractions only to calculate percentages is not in the spirit of the portfolio requirement to find changes using fractions. There was also the tendency to be slightly over-generous in the awarding of marks in theme one. It is difficult to moderate externally the level of independent work shown by a candidate but to award 14+ in theme one does need clear evidence of work of a creditable grade A standard.

The majority of candidates completed all the parts of the portfolios as specified in the specification. A minority did not, and a small number of centres did not reduce these marks as required.

As a guideline to centres, for the Managing Money unit:

- if only five of the six sections are completed the maximum mark in Theme 1 is 4; and the marks which would have been awarded in Themes 2 and 3 should be scaled down to a factor of two-thirds;
- if only four of the six sections are completed the maximum mark in Theme 1 is 3; and the marks which would have been awarded in Themes 2 and 3 should be scaled down to a factor of one half.
- if only three of the six sections are completed the maximum mark in Theme 1 is 2; and the maximum mark which could be awarded in Themes 2 and 3 are 4 and 4.

Similar reductions should be made in Making Sense of Data when a significant proportion of the requirements of portfolios is missing.

Several centres appreciated rather late that the requirement of completing **and assessing** portfolios by 10 January was challenging and whilst their candidates would be ready for the examination in early February, they were unable to meet the portfolio deadline.

The provision to carry forward marks, whereby candidates can carry forward their portfolio marks to the next session and re-enter the examination, was misunderstood by a number of centres. The rule only allows the portfolio marks to be carried forward; it does **not** allow candidates to carry forward their exam marks to the next session. Thus centres could not enter their candidates for the examination in February, and then submit their portfolios to be assessed in the following session. As a result, a number of centres withdrew their entries for this session.

Administrative issues were addressed well.

Managing Money (6981)

Foundation

Paper 6981/2

General

Candidates entered for this paper were well prepared, with many achieving creditable marks. Many showed enough working for method marks to be given where appropriate in cases where their answers were incorrect. Question 2, on change, was answered very well. Question 1 part (d)(i), on fractions; question 6, on pie charts; and question 7, on estimation, were the least well attempted questions.

Question 1

Part (a) of this question was completed well. In part (b), the question asked for the numbers of pairs of socks, 15, whereas candidates often gave the number of packs, 5, as their answer. Most candidates were successful in part (c) but a minority who found 34% to be £21.76 forgot to subtract this reduction from £64, the original price. Part (d) was found to be challenging; many did not find £18, the reduction, and the creation of a fraction $\frac{18}{30}$ (or $\frac{12}{30}$) caused major problems. Few simplified $\frac{18}{30}$ to $\frac{3}{5}$.

Question 2

This question was answered well.

Question 3

Many candidates were successful in this question. However, a significant proportion did not attempt to divide 114 by 6; to divide by 6, they used approximate percentages to $\frac{1}{6}$, some even used repeated division by 2, three times.

Question 4

This question was answered well by many candidates, although a significant proportion did not find 7 as the total number of parts. Others tried to divide £70 by 2.5, ignoring the ratio 2:5.

Question 5

In part (a), most completed column C correctly, although a number of candidates did forget to give their answer in pence as required; £1.08 was common instead of 108 (pence). Column D was also often completed accurately. Part (b) was completed well.

Question 6

The pie chart question was often answered weakly. Many candidates found the angle required for each sector but the entertainment angle, 111.6° , was often drawn as 116° . Part (b) was also answered weakly, with few adding the 'essential' spending to 51%, (or 181.3°) which was needed to prove that most spending was 'essential'.

Question 7

Unfortunately, most candidates used their calculators to carry out the required division rather than attempting an estimation as required. Candidates were expected to approximate the price to 50p, and then either divide £150 by 50p, or £149 by 50p. It was rare to see the alternative expected approximation of 2 rolls cost £1.

Question 8

This question was done well by a significant proportion of candidates. A few assumed that the interest was not compound and simply used £24.60 each time, whilst a few others misplaced the positions of the decimal point in the interest.

Making Sense of Data (6983)

Foundation

Paper 6983/2

General

Candidates entered for this paper were well prepared, with many achieving creditable marks. Overall, most candidates showed enough working to obtain method marks where appropriate and a number of very pleasing papers were seen.

Fractions, in question 2(b); ratio, in question 2 (c); and finding one number as a percentage of another, in question 4, presented large numbers of candidates with significant difficulty.

Question 1

This question was usually well done; a few candidates interchanged the mode, mean and median, whilst some found the mean and median of the thirteen numbers given in the data sheet, rather than the ten given on the question paper.

Question 2

Part (a) was answered well. Only a few candidates showed evidence that they did not possess a protractor. Parts (b) and (c) were weakly attempted. In part (b), few candidates obtained a fraction, and of those who did, it was rare to see the correct fraction simplified to $\frac{1}{3}$. In part (c), it was common to see $3000 \div 5$ rather than $3000 \div 6$; few candidates realised that in ratio 1:5, six parts were required.

Question 3

The common errors in part (a) were to forget the first set of values (0, 0) and to plot correctly the next set of values, (-8°C , 4000m). Relatively few candidates stated that the temperature is directly proportional to the height because the points lie on a straight line passing through the origin.

Question 4

Many candidates showed that they could not find one number as a percentage of another in this question, which was answered weakly. As in previous papers, many candidates divided the larger number by the smaller number, so, for example, the percentage for Bristol was found to be $\frac{67030}{8000}$ rather than $\frac{8000}{67030} \times 100$.

Few of those who did try the correct method gave their answer correct to one decimal place, with even those frequently truncating 1.7658 to 1.7 rather than rounding to 1.8.

Question 5

Many inappropriate scales were used, with a significant proportion of candidates not using a linear scale. The comment on the trend usually simply stated that the number of milk rounds went down.

Question 6

The bar chart was drawn well. Marks were lost when candidates did not label the axes, or for labelling the horizontal axis 0, 1, 2, 3..., so that a bar was between two measurements, rather than the bar being identified as representing the number of televisions in the bedrooms.

Coursework Portfolios

Intermediate

As usual, the entry for the intermediate level units in the January session was relatively small. Several centres appreciated rather late that the requirement of completing **and assessing** portfolios by 10 January was challenging and whilst their candidates would be ready for the examination in early February, they were unable to meet the portfolio deadline.

The provision to carry forward marks, whereby candidates can carry forward their portfolio marks to the next session and re-enter the examination, was misunderstood by a number of centres. The rule only allows the portfolio marks to be carried forward; it does **not** allow candidates to carry forward their exam marks to the next session. Thus centres could not enter their candidates for the examination in February, and then submit their portfolios to be assessed in the following session. As a result, a number of centres withdrew their entries for this session.

The majority of portfolios were appropriately assessed by their centres. Discrepancies in standard arose when the centre's marks did not fully reflect the fact that their candidates demonstrated only relatively limited use of intermediate level skills in portfolios, and by the slightly over-generous awarding of marks in theme one. It is difficult to moderate externally the level of independent work shown by a candidate but to award 14+ in theme one does need clear evidence of work of a creditable grade A standard.

Administrative issues were addressed well.

Calculating Finances

Intermediate

Paper 6984/2

General

Candidates made reasonable progress in the first three questions, including finding one amount as a percentage of another amount. However, they found some of the more demanding topics challenging particularly reverse percentages, question 4 part (b), and compound percentages, question 7. Questions involving the amount of income tax and National Insurance paid were also weakly attempted.

Question 1

Many candidates were successful in parts (a) and (b) but, in part (c), a significant number were unable to identify which of the amounts 351, 292 and 62, to use.

Question 2

Most candidates were successful in part (a) and part (b), although some forgot to subtract the original £5000. Part (c) was answered well by many, but part (d) caused major difficulties. Most candidates obtained 37 for $n + 1$, but their inadequate calculator skills caused major problems in the calculation.

Question 3

This question was well answered.

Question 4

In part (a), most candidates realised that they needed to add 17.5% onto the value of £1700, but a number simply added £17.5. A significant proportion of candidates wrote the answer as £1997.5, and were penalised for not giving the answer in the correct money form. No candidate attempted to equate £2000 to 117.5% in part (b).

Question 5

Most candidates found the annual income in part (a) and subtracted the tax-free allowance of £4745. Very few candidates attempted to find the amount of income taxed at 22p in the pound, and those who did often subtracted £202, the tax paid at 10%, rather than £2020, being the income taxed at 10%.

Question 6

Part (a) was answered correctly by all candidates, but none was able to master the amount subject to National Insurance at 11%, although one did find the amount subject to NI at 1%. Many candidates were successful following through their work into parts (c) and (d).

Question 7

This question was found demanding. Candidates normally just added the 20% and 15% quoted in the question. One candidate attempted to find 15% of 120% but did not appreciate what to do with the 18 found.

Handling and Interpreting Data

Intermediate

Paper 6986/2

General

Candidates entered for this paper were well prepared with many achieving good or even very good marks. A number of very pleasing papers were seen. Candidates found it difficult to comment mathematically on data (e.g. question 1, question 3(d)) preferring to give general opinions. Finding percentages (question 2(f)) also caused problems to many.

Question 1

This question was answered weakly. Candidates did not give mathematical justifications, preferring to air their own thoughts rather than to use the given data. Part (a), counting the number of miles, was usually correct. In part (b), candidates stated opinions rather than numerical facts, such as the shorter time taken by Paula in the first half of the two marathons. In part (c), “one hundred-minute hours” were commonplace and virtually no-one used the fact that sixty seconds make one minute.

Question 2

Most candidates answered most of this question correctly. Part (f) did cause problems, with a significant proportion of candidates struggling to find 7% of £72 000.

Question 3

The cumulative frequency diagram was well done. As it used real data, the curve was not a common simple smooth *S* type but this caused candidates no problem. A few plotted the points at the minimum of each interval rather than at the maximum. Parts (b) and (c) were well answered, although in the box and whisker diagram, a few used 0 as the end of the whisker rather than 100. The difference in the two airports was sufficiently clear that virtually all answered part (d) well. Once again, a few gave non-mathematical comments not related to the question, one even mentioned Heathrow!

Question 4

This question was very well done. Part (a) was completed well by almost all candidates.

Problems in part (b) arose when candidates quoted $r_1 = r_2 \sqrt{\frac{n_1}{n_2}}$ and were unable to produce

$n_2 = \frac{r_2^2}{r_1^2} \times n_1$. A few found $\frac{25}{4} \times 7200$ rather than $\frac{4}{25} \times 7200$, and these candidates might

have realised that their result did not reflect real life- when a by-pass is opened fewer vehicles will pass through the village. Part (d) was answered well, although few appreciated that the increased proportion of buses shown in the new pie chart did not imply that more buses in total went through the village.

Question 5

Part (a) of this question was well answered; the difference was frequently given as 978 rather than 978 000, but this was condoned on this occasion. Many candidates answered part (b) well, with many realising that there was a false zero of 1000 (thousands).

Mark Ranges and Award of Grades

Foundation Level

6981 Managing Money

Unit/Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
6981/1: Coursework Portfolio	51	51	24.2	10.8
6981/2: Written Paper	40	51	32.5	10.7
6981 Managing Money	91	102	56.8	17.4

		Max. mark	A	B	C	D	E
Coursework Portfolio Boundary Mark	raw	51	40	32	24	17	10
	scaled	51	40	32	24	17	10
Written Paper Boundary Mark	raw	40	33	29	25	21	18
	scaled	51	42	37	32	27	23
Unit Scaled Boundary Mark		102	82	69	57	45	33

Provisional statistics for the award (669 candidates)

	A	B	C	D	E
Cumulative %	6.0	25.3	47.5	63.1	80.9

6983 Making Sense of Data

Unit/Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
6983/1: Coursework Portfolio	51	51	23.6	9.8
6983/2: Written Paper	40	51	32.1	9.3
6983 Making Sense of Data	91	102	55.7	15.8

		Max. mark	A	B	C	D	E
Coursework Portfolio Boundary Mark	raw	51	40	32	24	17	10
	scaled	51	40	32	24	17	10
Written Paper Boundary Mark	raw	40	32	29	26	23	20
	scaled	51	41	37	33	29	26
Unit Scaled Boundary Mark		102	81	69	58	47	36

Provisional statistics for the award (586 candidates)

	A	B	C	D	E
Cumulative %	3.1	19.3	41.6	63.7	79.4

*Intermediate Level***6984 Calculating Finances**

Unit/Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
6984/1: Coursework Portfolio	51	51	23.0	6.9
6984/2: Written Paper	50	51	20.3	5.6
6984 Calculating Finances	101	102	43.1	10.0

		Max. mark	A	B	C	D	E
Coursework Portfolio Boundary Mark	raw	51	40	32	24	17	10
	scaled	51	40	32	24	17	10
Written Paper Boundary Mark	raw	50	37	32	28	24	20
	scaled	51	38	33	29	24	20
Unit Scaled Boundary Mark		102	78	66	54	42	30

6986 Handling and Interpreting Data

Unit/Component	Maximum Mark (Raw)	Maximum Mark (Scaled)	Mean Mark (Scaled)	Standard Deviation (Scaled)
6986/1: Coursework Portfolio	51	51	28.2	8.6
6986/2: Written Paper	50	51	30.3	9.8
6986 Handling & Interpreting Data	101	102	58.7	16.5

		Max. mark	A	B	C	D	E
Coursework Portfolio Boundary Mark	raw	51	40	32	24	17	10
	scaled	51	40	32	24	17	10
Written Paper Boundary Mark	raw	50	37	32	28	24	20
	scaled	51	38	33	29	24	20
Unit Scaled Boundary Mark		102	78	66	54	42	30

Provisional statistics for the award (41 candidates)

	A	B	C	D	E
Cumulative %	9.8	41.5	65.9	80.5	100.0

Definitions

Boundary Mark: the minimum (scaled) mark required by a candidate to qualify for a given grade.

Mean Mark: is the sum of all candidates' marks divided by the number of candidates. In order to compare mean marks for different components, the mean mark (scaled) should be expressed as a percentage of the maximum mark (scaled).

Standard Deviation: a measure of the spread of candidates' marks. In most components, approximately two-thirds of all candidates lie in a range of plus or minus one standard deviation from the mean, and approximately 95% of all candidates lie in a range of plus or minus two standard deviations from the mean. In order to compare the standard deviations for different components, the standard deviation (scaled) should be expressed as a percentage of the maximum mark (scaled).