

KEY SKILLS APPLICATION OF NUMBER (NOVEMBER SERIES) 2004

Chief Examiner's Report

Level 1

The paper was acceptable for students at this level providing a good spread of marks, with many candidates performing well. On a national level, the group of students entered for this test was well prepared and did not exhibit many weaknesses.

They performed particularly well in many areas that have been identified in previous reports, like reading tables, charts and diagrams, but also showed good facility in using scales for maps/plans which has often been a problem.

Statistics reveal that a majority of these students had problems in the following areas:

- calculation of a mean;
- converting a simple decimal to a fraction;
- many had problems with a question where the necessary information was split between a written stem and a 'label'.

A substantial number of candidates showed evidence of problems with:

- volume and area;
- range from a list of numbers;
- calculation including fractions or proportion.

Level 2

In this level two paper, there was, as frequently happens, a major difference in the performance (pass-rates) of candidates doing this paper as Application of Number and those adults sitting the paper as Adult Numeracy. The evidence that the paper was a fair test of the Level content is reflected in the high pass rate among the Adult Numeracy students. On the other hand, there were many candidates entered who were not ready for a Level 2 test in Application of Number and this is reflected in the Application of Number pass-rate.

The paper provided a good spread of questions covering the Standards and allowing for differentiation of abilities. A few Level 2 Application of Number candidates show major strength in this area, but a substantial number exhibit major weakness in Number skills.

More specifically, a majority of students had difficulty in questions involving:

- percentage increase;
- changing a percentage to a fraction;
- estimating a percentage change eg from 55928 to 52178 – is tricky, but remember possible answers are given;
- finding and comparing mean, mode or median; while range remains a weakness, candidates appear to have improved;
- volume of cuboids;

- area of compound shapes;
- methods to check calculations;
- substitution into formulae including a formula given in words (for cooking a joint of meat).

It is pleasing that there seems to be an improvement in the use of scales in plans and maps. Candidates also did better with foreign exchange questions than noted in the past.

Many candidates appear to struggle with calculations involving more than one step where they need to decide which operation to use; this seems to be particularly a problem where multiplication and/or division are involved.

Level 3

The performance of some candidates in the November 2004 test was excellent and CCEA pass rates were again higher than other Awarding Bodies'; sadly there remain centres who have entered candidates who are not yet operating at Level 3 in Application of Number. While most of these candidates make a genuine effort in the test, they struggle to pick up marks and must find it an arduous experience.

The paper was felt to be a fair test in comparison to previous papers. This was shown both by the good performances already mentioned and by the ability of well-prepared weaker candidates to gain a good spread of marks through the paper.

One observation that has been made before: Section B was not particularly difficult, but based mainly around Statistics. Northern Ireland candidates often perform poorly in Statistical sections compared to candidates obtaining equivalent scores in England and Wales. Two examples from reasonably able candidates: one scored 27/33 in section A and 3/17 in section B, the other scored 24/33 in section A and 1/17 in section B. The discrepancy does not appear to be linked to time constraints, as there were attempts at all parts of Section B. Teaching staff would benefit from reviewing statistical content of past papers and the Chief Examiner's comments on these.

In several parts of questions early rounding or truncation produced inaccurate answers.

A small number of candidates attempt to present multi-stage calculations in one line – this brings two penalties; their reasoning process is inhibited and they cannot earn part marks.

Some comments on specific questions

- Q.1 (a) Candidates struggled with the large numbers and controlling the changes of units.
- (b) Done well by those who worked step-by-step, but many strange attempts eg adding the three sets of ratios!
- Q.2 (a) Again, the control of units (£ or p) created some weird answers. One would expect candidates to re-examine an answer where the cost of running a household washing machine is £5 176.9872! A surprisingly large number of candidates do not know how many days or weeks there are in a year.

- (b) Similar comments to part (a) – if the original bill was £213, is it likely that the new bill will be £22 016.80? The use of proportion causes difficulty to many candidates who seem to have no structure for reasoning or communicating this.

Q.3 Some centres' candidates formed and solved simultaneous equations with confidence. The mark for (c) cannot be given unless substitution is seen in (b).

- (d) Surprisingly poorly done – largely because candidates did not read and interpret the information carefully.

Q.4 (a) Few candidates understood this question – the need to consider the quotient of the sales income and the mass of tea sold.

- (b) Many reached the correct conclusion, although the use of units was often uncertain.

- (c) Only a minority of candidates knew to divide by 1.31.

- (d) Another question where the use of large numbers and units caused difficulties.

- (e) It is good to see the use of a factor in repeated percentage change is becoming more common.

- (f) Most candidates knew and used the formula for the volume; there were a few misinterpretations of the answer.

Q.5 (a) Generally did not cause a problem for candidates, as an acceptable answer did not require both approximation and simplification of the fraction.

Responses to (b) and (c) included many confused answers as candidates did not distinguish between recommendation A and recommendation B. A substantial number could not translate the statements into diagrams and/or numerical interpretations. Many who had clear diagrams used cosine and Pythagoras successfully.

Q.6 (a) Unlike Q.5 (a), this does require both an approximation and simplification.

(b)(c) Previous papers should make it clear that the drawing and interpretation of Cumulative Frequency graphs are expected at Level 3. There are still centres where the majority of candidates show little understanding of the technique.

- All graphs and charts should have a title and fully labelled axes.
- Scales should be linear and continuous.
- The use of category labelling is totally inappropriate (as it is also in a histogram).
- The cumulative frequencies should be plotted at the upper class boundaries.

In some centres basic errors in these are rife; in other centres the majority of candidates are able to follow these guidelines.

Candidates should then be able to use the graph to estimate median and interquartile range.

- (d) Calculation of mean from a grouped frequency table is another Level 3 'standard'. Once again, performance in this seems to vary by centre. Candidates should be aware that time is not decimal eg in this case that 39.4 years is not 39 years 4 months.
- (e) It is not sufficient to restate the definition of the chosen average.

Candidates need practice in interpreting statistical data in the context; this interpretation should refer to the statistical measures and will often require a calculation.

KEY SKILLS APPLICATION OF NUMBER

(APRIL MODERATION - comprising November 2004, January 2005 and March 2005)

Principal Moderator's Report

General Comments

Portfolios were submitted by a number of centres at Level 1, 2. All of the centres were accredited.

Task setting

- The activities chosen came from a variety of subject areas, providing candidates with adequate opportunities to generate sufficient, appropriate evidence for the level of entry.
- Portfolios were generally well presented.

Fulfilment of Standards

Level 1

- The majority of portfolios had appropriate source material to allow the generation of sufficient evidence.
- Some portfolios did not contain sufficient calculation evidence for all the required categories of N1.2
- Some of the sample portfolios did not have the required two different methods of presentation using charts and/or diagrams for N1.3. A number did not adequately describe their results and relate their findings to the purpose of the activity.

Level 2

- The majority of portfolios had adequate source materials to generate the appropriate evidence. Some portfolios did not have the required material containing a graph.
- A number of portfolios had insufficient calculation evidence for all the required categories for N2.2
- Some portfolios did not have the required two different methods of presentation from charts and/or graphs and/or diagrams to meet N2.3. A number of candidates did not adequately explain how their results and findings related to the purpose of the activity.

Annotation

- Some centres did not fulfil the requirements for annotation. Centres are reminded that evidence needs to be annotated to indicate the standards being claimed.
- Sources should be clearly labelled to distinguish them from generated evidence.

Centres are reminded that level 2 candidates must ensure that they use some source material containing a graph or a chart.

- To demonstrate understanding of the processes, all charts, graphs and diagrams should be adequately and accurately labelled and interpreted, particularly when they are produced using IT.

Many candidates submitted well-organised portfolios. The best examples indicated the location of each piece of evidence by page reference, which facilitated the easy location of the claimed evidence.

Desktop Task

The purpose of the Desktop Task is to confirm the portfolio level. The Desktop Tasks submitted were of a good quality and have proved to be a meaningful, 'fit for purpose' assessment instrument.

Centres are advised to plan their learning programme to allow sufficient time to carry out the Desktop Task