

KEY SKILLS APPLICATION OF NUMBER (JUNE SERIES) 2004

Chief Examiner's Report

Level 1

There appear to be more candidates entered at a suitable level at Level 1. The proportion of successful candidates who can use number skills effectively is reflected in higher pass rates. The paper provided these candidates with the opportunity to display their ability.

Candidates showed strengths in working in:

- simple money problems;
- using time;
- reading from charts and tables;
- rounding to nearest whole number, 10 and 100;
- writing numbers in words and vice versa;
- reading measurements from scales;
- knowledge of appropriate units.

Candidates coped well with simple 'percentage of' questions eg 20% of, but not with 15% of they also have difficulty in converting fractions to decimals eg $\frac{3}{5}$

Candidates lack confidence in dealing with fractions generally e.g. in writing one number as a fraction of another.

The problem topics include the continuing weakness in simple statistical calculation – finding mean and range.

Like candidates at each level, Level 1 students have problems with methods of checking calculations, though this group showed better awareness of checking.

Some candidates need to revise decimal subtraction.

A simple 'sharing in a ratio' problem defeated most candidates.

Only a small minority could deal with volume of a cuboid.

Level 2

A substantial number of candidates nationally for this series were poorly prepared for a Level 2 test. Most of their difficulties were in topics, which have been identified previously. For example, a substantial number of candidates showed evidence of problems with statistical vocabulary like 'mean' and 'range'.

The test itself was of a similar standard to recent papers – somewhat long, but providing fair opportunities to show Level 2 skills.

Candidates performed well in questions based on:

- money;
- interpreting charts and graphs;
- exchange from £ to € and gallons to litres;
- reading a scale.

Unfortunately there were considerably more areas of weakness than strength; in the following areas, a majority of candidates selected an incorrect answer.

- Methods of checking calculations.
- Scaling up or down in a scale drawing, which will often require change of units.
- Candidates performed poorly in substitution into a formula.
- Expressing one number as a percentage or fraction of another.
- Responses to statistics questions were generally poor.
- Less than one third of candidates nationally could work out the volume of a cuboid that required a simple decimal product. The results from calculating the area of an L shape were even worse!
- Candidates found difficulty in answering a question involving change of time zones.

Weakness in using percentage is highlighted by the fact that over one third of candidates could not choose a fraction equal to 30%.

Level 3

The cohort for this paper using CCEA was small and not representative of a range of abilities. Candidates found the paper to be challenging; it placed particular demands on their ability to interpret complex data that was presented to them and then to decide on the methods required to answer the question. This is a weakness for many candidates whose number work is otherwise reasonable. Candidates were generally strong in carrying out calculations; however the reasoning process to decide on the **correct** calculations often caused problems. Therefore the range of performance was wide and many candidates had difficulty in reaching the end of the paper.

Because of the underlying difficulty of the data interpretation and calculation, the examiners were relatively generous in allowing a wide range of accuracy in the answers accepted for most questions.

- Q.1 (a) Many errors in calculating with percentages (discount and VAT) – as always, the best route are to use a factor.
- (b) This failure to think of multiplying for percentage change also causes problems in ‘percentages backwards’ problems.
- Q.2 Candidates need to be aware of the units being used at each stage of a calculation. Part (b) was a difficult example of this involving decimalising time, linked to an average speed calculation. At Level 3, candidates cannot expect that the real life numbers will give ‘easy’ calculations.

In part (c), it seems that a substantial number of candidates were unable to decide what to do with all the figures supplied.

Q.3 This was a relatively simple formula, which provided many candidates with an opportunity to gain marks.

Q.4 In the relatively simple calculations of (a) and (b), it seems that some candidates were frightened by the 'large numbers' (including standard form).

Those who knew trigonometry found (c) and (d) straightforward.

(e) This was a difficult concept in how it combined two ratios, so it was pleasing to see that some candidates managed to reason their way through to a solution.

Q.5 This question demonstrated again the weakness of many candidates in dealing with area/volume (formulae must be memorised).

Q.6 Many candidates were able to form and solve the simultaneous equations.

In (c), there was once again evidence of difficulty in interpreting data and selecting methods.

Q.7 Parts (a) and (b) were relatively straightforward, but caused difficulty because of the large numbers involved.

Candidates were not provided with an upper bound value for plotting the ogive, but should know that the cumulative frequency must be plotted at the upper bound. Many could not draw the graph, or find the median and interquartile range.

Candidates were generally poor in interpreting the data in words.

Principal Moderator's Report

General Comments

Portfolios were submitted at Levels 1, 2 and 3.

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 Specification Criteria

Level 1

- The majority of portfolios had appropriate source material to allow the generation of sufficient evidence.
- Some portfolios did not contain calculation evidence for all the required categories.
- All the sample portfolios met N1.3.

Level 2

- Some portfolios did not have the required material containing a graph.
- Some candidates did not provide evidence for all the required categories.
- The majority of candidates met N2.3.

Level 3

- All portfolios had adequate source material to allow them to carry out appropriate calculations for this level.
- Some portfolios did not contain sufficient evidence of multistage calculations for all the required categories. Spreadsheet evidence was generally supported by appropriate manual calculation evidence. Centres are reminded of the necessity for evidence to show methods of calculation clearly, step by step, and to include records of how results have been checked for accuracy or sense. There was adequate evidence of checking in most portfolios.
- The majority of candidates met N3.3.

Annotation

- Some centres did not fulfil the requirements for annotation.
- The location of evidence should be recorded on the key skills tracking sheet, preferably using a page-referencing system.
- Sources should be clearly labelled to distinguish them from generated evidence. In the future level 2 candidates must ensure that they use some source material containing a graph or a chart to meet the 2004 standards.
- 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 used a page-referencing system, which facilitated the easy location of the claimed evidence.