

Application of Number Level 3 January 2008

General Comments

The paper was of a similar standard to papers used in previous series. It was well balanced in its coverage of Level 3 skills, and questions were set in contexts that would have been familiar to candidates. The opening questions were reasonably straightforward and will have given candidates an opportunity to make a confident start.

Candidates in some centres made decisions on the order in which they attempted questions, and some found it advantageous to begin by answering the Extended Answer question instead of leaving it to the end. This may indicate that they used the 15 minutes reading time to reflect on how they would do the paper. Centres are advised to give guidance to candidates on how to use this reading time to best effect, to read questions carefully, identify key information and think about methods of solving them, making rough notes.

The pass mark on this paper was similar to previous series but the proportion of candidates obtaining a pass mark was higher than previously. There was a wide variation in the performance of candidates in different centres. Some made reasonable attempts at questions, but the performance of others suggested that they may not have been ready for the test. Where errors were seen, it was in the selection or application of methods, in identifying and using the information given as well as in calculating results. Presentation of working is important in Application of Number. Candidates should be aware that they can gain some marks by showing complete correct methods even if their final answer is not correct.

Incorrect rounding often lead to marks being lost; rounding part way through a calculation was often seen, with candidates writing down and using rounded or truncated results of stages of their method, rather than holding results on their calculator. Incorrect rounding on final answers was not over-penalised on this paper, but some candidates lost marks through failing to give their answer to a sensible level of accuracy. Units were often given correctly, although some confusion between pounds and pence was evident on one question. Candidates should note that the use of 'p' after a price given in pounds (e.g. '£0.42p') is not acceptable.

The questions answered most successfully were those involving calculations using proportion, percentages and checking by estimation. Questions involving calculations of time, finding the mean from a grouped frequency table, area, algebra and trigonometry were often handled well by stronger candidates, but others showed weaknesses in these areas.

Comments on Particular Aspects of the Question Paper

The paper began with a question on a charity auction which proved relatively straightforward for many candidates. Where errors occurred, they involved premature rounding in some cases, or in carrying out a division in the wrong order. Some candidates lost a mark by writing 42p as 0.42p or £0.42p, or by truncating their answer to 41p.

Many candidates were able to score some marks on a question about museum charges. Stronger candidates identified the reverse percentage question, but many chose an incorrect method, calculating a percentage then subtracting. A relatively straightforward question that asked for an approximate ratio was not generally well handled. Some candidates did not realise that they had to approximate the values, and used a calculator to find an answer of 1 : 1.676 instead of the approximation 3 : 5, and others failed to give the ratio in a simple form. The compounded percentage question was identified by many candidates, and many instances of correct working were seen; some lost a mark by giving the number of years instead of the year in which a value would fall below a given number.

A question about an Olympics bob-sled event proved demanding. Few were able to give a difference between the time per run for two competitors, with many misreading the question and finding the time for two runs. In a part question about the speed of a competitor, most candidates were able to convert the distance from kilometres to miles, but many had problems in converting a time in minutes and seconds to a decimal. Many candidates did correct working on a trigonometry question, but there were some who did not select a method using the sine. A common error in this question was inappropriate rounding or truncation of the final answer.

In a question about the UK population, a minority of candidates successfully found an approximate fraction. Many did no approximation, and gave their answer as a percentage instead of a fraction in the form $\frac{a}{b}$. Others gave an unsimplified fraction.

An estimate of the mean house price was correctly calculated by stronger candidates, but others showed insufficient grasp of the correct method for dealing with information presented in a grouped frequency table.

In a question about a field to be used as a campsite, some candidates were able to scale up dimensions, but relatively few went on to use Pythagoras' theorem to calculate a distance. A common error was an incorrect conversion between centimetres and metres, and some candidates subtracted the squared values they obtained instead of adding them. A subsequent part question involved the area of the field. Common errors here were incorrect method to find the area of a trapezium or finding the area using the scaled dimensions and then applying the scale factor once.

The extended answer question about book reading required the drawing of a pair of cumulative frequency curves, and while many candidates gained some marks, few completely correct diagrams were seen. Common errors included omission of a title or axis labels. Many candidates omitted to use continuous linear scales and plots were often seen on the midpoints of the intervals. Candidates in some centres showed little awareness of the correct method of estimating the median from a cumulative frequency graph.

Recommendations to Centres

Centres must ensure that candidates:

- use the reading time to best effect, to read and understand questions, identify key data and plan their approach to solving the problems, making rough notes in their answer booklet
- set out workings clearly showing the complete method used
- solve problems involving scale diagrams, area and volume and conversion between different units of measurement
- find the mean from grouped frequency tables
- choose suitable levels of accuracy and be guided by the data provided
- avoid premature rounding in multi-stage calculations
- follow the conventions used for graphical presentations, in particular titles, appropriate labelling and units, and use suitable linear scales where necessary.

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