

## June Test Series 2006

### Chief Examiner's Report

#### Application of Number

##### Level 3

##### General Comments

The paper was of a similar standard to papers used in previous series. Questions were set in contexts that would be familiar to candidates, and gave balanced coverage of the skills described in part A of the Key Skills standards. As on previous occasions, the paper was long, and many candidates did not attempt all the questions. The opening question was more demanding than usual in the amount of information given. A diagram in one question was potentially misleading, in that, although described as a rough plan and therefore not intended to be to scale, the size of the piece of land was not in proportion to the dimensions shown.

As in recent previous series, there was little evidence to show that candidates had used the 15 minutes' reading time introduced on papers this year. Centres are recommended to advise candidates on ways of using this time to best effect, to read and understand questions, to plan the order in which to attempt questions, to identify key information, select methods and make rough notes.

The pass mark on this paper was similar to previous series but the proportion of candidates obtaining a pass mark was lower than previously. There was some variation in the performance of candidates in different centres. Whereas some made a reasonable attempt at questions, others showed little evidence of preparation for the types of question that are commonly seen at this level. Many errors were seen on incorrect choice or application of methods, in identifying and using the information given and in calculating results. Sometimes, candidates chose lengthy multi-stage methods where errors were more likely to occur, when simpler methods were preferable. Incorrect decisions on rounding were a common reason for incorrect answers; candidates lost marks by rounding or truncating part way through a calculation, writing down and using rounded results of stages of their method, rather than holding results on their calculator. Presentation of final answers is an important stage in application of number, which carries marks in tests. Candidates sometimes fail to gain these marks by failing to round their answers to an appropriate level of accuracy.

The questions answered most successfully were those involving using and rearranging a formula, calculations using proportion, using right-angled triangles, and compounded percentages. Questions on finding the mean from a grouped frequency table, area and volume and trigonometry were often handled well by stronger candidates, but others showed weaknesses in these areas. The weakest responses were seen on questions involving interpreting graphical and statistical information, converting units, scaling dimensions and simultaneous equations.

## Comments on Particular Aspects of the Question Paper

The paper opened with a question on the nutritional content of foods. Few candidates obtained completely correct answers, with many instances of incorrect use of the data or incorrect method seen. Some candidates rounded prematurely and obtained an incorrect final answer. Very few correct responses were seen to a part question requiring a fraction. Some candidates gave their answer as a percentage rather than a fraction in the form  $\frac{a}{b}$ . Many did not identify the correct values to use in a fraction, possibly finding difficulty in handling very small numbers.

A question about the cost of buying and running a car was well handled by a fair proportion of candidates, and many correct responses were seen, resulting from careful layout of workings. Common errors included the use of incorrect notation for a result in pounds and pence, which was seen given to 1 decimal place on several occasions. In a part question about depreciation, some candidates used the original base value for all three years instead of compounding the percentage decrease. When calculating the cost of fuel, a common error involved failure to convert pence to pounds. In the part questions asking for a check by estimation, some candidates showed only a partial check, where a check of all the stages in the calculation was required.

In a question about planning a garden, stronger candidates often obtained full marks for correct calculations involving area and volume, and a right angled triangle. Some candidates showed weakness in choice of method to find the area of a circle, whereas others used the area of one circle instead of three as shown in the diagram, or omitted to account for the special offer price shown. Correct use of Pythagoras' theorem was widely seen, but some candidates had difficulty in adding a length found in metres to a length given in millimetres. Few attempts at the part questions on simultaneous equations were seen, and very few candidates used algebra to find a solution, although some used trial and improvement successfully.

A question involving use of dimensions taken from a scale diagram was poorly answered overall. Many candidates failed to use the scale correctly, many finding the area of the diagram, then applying the scale factor, rather than scaling the dimensions. Other common weaknesses were in converting between millimetres and metres, and in finding the area of a trapezium. Some correct results were seen to the trigonometry question, but some candidates misinterpreted the diagram and used incorrect dimensions, whereas others chose the incorrect function. Few candidates successfully found a price per square foot for property when given an area in square metres. A part question involving a compounded percentage of a type often seen on papers was well handled by many candidates.

Most candidates gained marks on a question about investments involving using and rearranging a formula. Substitution was generally done correctly, but a number of candidates misread the index number and multiplied by 5. Others used the correct method but did not give their answer to the level of accuracy stated in the question. A part question involving use of a ratio was generally completed successfully.

The extended answer question required candidates to interpret a graph showing the annual distributions of call waiting times at a call centre. While some were successful in describing a similarity and a difference between the distributions for the three years, others focussed on the values for just one month rather than describing the distributions. Many candidates gained some marks by drawing a cumulative frequency graph, but few completely correct graphs were seen. Common errors included omission of a title or of axis labels with correct units. Many candidates did not use continuous linear scales. The height of plots was generally correct, although some candidates made correct plotting difficult by their choice of scale, while others plotted on the midpoint of the class instead of the upper class boundary. Candidates in some centres showed little awareness of the correct method of using a cumulative frequency curve to estimate the interquartile range.

## 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 if necessary
- practise using very large and very small numbers
- solve problems involving construction and solution of simple equations
- solve problems involving scale diagrams, area and volume and conversion between different units of measurement
- choose suitable levels of accuracy and be guided by the data provided
- avoid premature rounding in multi-stage calculations
- check to see they have answered each question fully after finishing it
- follow the conventions used for graphical presentations, in particular using titles, appropriate labelling and units, and use suitable linear scales where necessary.

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