

O Level

Mathematics

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UNIVERSITY OF CAMBRIDGE
LOCAL EXAMINATIONS SYNDICATE

**Report of the Examiners in Ordinary Level
Mathematics**

(Based on the years 1955–1957)

Alternative A

By 1955 the work had, in general, reached a good standard. Since then, however, a slight deterioration has occurred.

Arithmetic is still the weakest branch and the low standard of accuracy, referred to in the last report, shows no improvement. Many candidates are unable correctly to perform the most elementary operations, such as 'cancelling', and division by powers of 10. Most candidates show a grasp of method in solving problems on rates, ratios and averages, but work on areas and volumes has been consistently marred by confusion of units. Trigonometrical ratios are generally used correctly, but candidates often lose marks by inability to draw a correct diagram. When drawing a 3-dimensional figure most candidates ignore the principle that 'vertical lines remain "vertical"'.

In Geometry, some weakness in bookwork has been noticed and there is evidence that certain other parts of the syllabus have been neglected, especially constructions involving the idea of intersecting loci and all work involving ratio and similarity. The criticism in the last report of the arrangement of work is still valid—diagrams are often drawn at the foot of a page and the argument written overleaf. A recent unsatisfactory feature in geometrical constructions has been the drawing of very faint lines barely visible to the examiners. This practice sometimes makes it difficult for the work to be assessed.

In Algebra, the general standard is satisfactory, although there is clear need for continued emphasis on the teaching of fundamental principles. Work involving brackets, fractions (in particular, equations containing fractions) is of a very low standard. There is also marked inaccuracy in arithmetical calculations. In solution of quadratics, change of subject in a formula, and in graphs, there has been some improvement, and questions on progressions have been well answered. The basic weakness in indices and theory of logarithms, however, still persists.

Alternative B

There has been a big increase in the number of candidates offering this syllabus and in the number of very weak scripts. In the examiners' opinion many of these candidates should not have been entered for the examination.

The standard of arithmetical accuracy is still disappointing and errors in such elementary processes as multiplication, division and decimalisation are far too common. Many easily avoidable mistakes occur in the use of tables, particularly when square roots or the difference columns of the cosine tables are involved. There is also widespread uncertainty in the use of significant figures and too many cases of premature approximation in which the approximation is used for later calculations. The excessive use of logarithms noted in the previous report is not so apparent.

The most noticeable trends are an increasing weakness in basic manipulation in elementary algebra and a decline in the quantity and quality of the work in formal geometry. Many attempts at factorisation and change of subject are pitiful and a number of schools produce little geometry of any value. On the other hand, an improvement has taken place in the specialised topics such as plan and elevation, course and track, and latitude and longitude, although these equations are too often attempted by schools where the preparation appears to have been inadequate. The work on quadratic equations has definitely improved and it is interesting to note the gradual change from 'completing the square' to use of formula. Graphs are generally well drawn but calculations and deductions from these graphs leave much to be desired. The neatness and accuracy of drawing has improved and in general has reached a very satisfactory standard.

Trigonometry is perhaps the most successful part of the syllabus and there are far fewer wrong ratios. The questions involving sine and cosine formulae are generally well done, except that such mistakes as $25 - 24 \cos \theta = \cos \theta$ occur far too often. There has also been a noticeable improvement in the appreciation of solid figures.

SYNDICATE BUILDINGS

CAMBRIDGE

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