



Mathematics in Education and Industry

MEI STRUCTURED MATHEMATICS

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C4 Comprehension

What is it and how do we prepare for it?

Presenter: Michael. R. Ling
MEI Professional Officer,
"God's Providence",
12 Trowell Grove,
Long Eaton,
NOTTINGHAM. NG10 4AZ
Tel/Fax: 0115 973 2979
email: Michael.ling@mei.org.uk

Comprehension.

The aim of the comprehension question is to foster the view among students that in learning Mathematics, they are acquiring skills which transcend the particular items of specification content which have made up their course.

The objectives are that candidates should be able to:

- (i) read and comprehend a mathematical argument or an example of the application of mathematics;
- (ii) respond to a synoptic piece of work covering ideas permeating their whole course;
- (iii) appreciate the relevance of particular techniques to real world problems.

The syllabus statement is:

"The ability to read and comprehend a mathematical argument or an example of the application of mathematics".

The competence statements are:

- 1 Be able to follow mathematical arguments and descriptions of the solutions of problems when given in writing.
- 2 Understand the modelling cycle, and realise that it can be applied across many branches of mathematics.

The notes are:

This may be assessed using a real-world modelling context.

Abstraction from a real-world situation to a mathematical description; approximation, simplification and solution; check against reality; progressive refinement.

Past history:

The comprehension paper used to address the section in the common core topic on Variability. This section was removed for the Curriculum 2000 specifications.

- 1996 – 2000 Tasks had a flavour of Statistics (to cover the variability element of the common core. They were marked out of 10
2000 – 2005 Tasks were based on Pure Mathematics. They are marked out of 15.
2005 - Tasks will still be based on Pure Mathematics but will be marked out of 18.

Consequently, the past paper comprehensions are no longer typical pieces. They may be used as practice so long as teachers and students are aware that those before 2000 could not be set and those for curriculum 2000 do not have the right mark allocation.

The extra marks will be awarded partly by easing the tariff, but in general there will be one extra question.

Before 2000 candidates were expected to answer the questions on paper, but now there is a printed booklet for the answers rather like GCSE.

How best may students prepare for this part of the assessment?

Read Mathematics books and articles.
"Mathematics in schools"
"Teaching Statistics"

Use past papers, practice papers and questions from the Comprehension Pack prepared by MEI.

There are practice papers available from 1996. These practice papers were not revised to the correct standard and they may seem to be hard. Like the past papers they also could now not be set as they concentrate on variability of data.

Many articles in magazines would not fulfil the criteria either, but that does not matter. Students should be encouraged to learn to assimilate mathematical ideas from the written word and not just what the teacher tells them from the front of the class.

Past papers are available on the MEI site in the Teachers' resources section.

There are also some practice pieces prepared by the Pure Mathematics Development Group based on work from earlier modules (e.g. C1 and C2) so that students may prepare before the work of C4 is completed. This is also offered as a hard copy photocopyable masters from the Office.

Would it help if they were to read their Mathematics Text book?

Thoughts from the Awarders.

1. Experience indicates that very few fail to finish.
2. The rubric of the module C4 says that the paper is 1 hour. However, in the description, it says that candidates are expected to take no more than 40 minutes.

The structure of the questions

The structure is to assess the ability to:

1. Interpret the information given.
2. Explain the Mathematics.
3. Do some mathematics to extend the situation described.
4. Do some mathematics in a similar, but different situation.
5. Comment on a slightly different situation.

Suggested procedure for students:

1. Read very carefully to get the gist of the article.
2. Read again slowly, noting the mathematics that is required.
3. Note where there is a piece of mathematics about which you are not quite sure.
4. Look at the questions. Answer those you can.
5. Take the other questions, thinking through them carefully - re-read the text as many times as you can to understand what is being asked.
6. Ensure that the work is written neatly and that you have left nothing on scrap paper that might be of use in the assessment.