

# Paper-based Test

## University of Strathclyde

Interview with Alison Ramage ■ Department of Mathematics

### Abstract

*The mathematics department at the University of Strathclyde introduced in 2001 a paper-based diagnostic test to test the elementary mathematics skills of their first year mathematics students.*

### The Execution

The diagnostic test (at Strathclyde University known as 11.612 Mathematics 1A: Revision Test) was developed last year (2001) by Alison Ramage. The test is paper-based, and taken by the students in class over the course of one hour. Students are required to stay until the end of the hour, but can spend the time after completing the test by thinking about a mathematical 'teaser problem' set by the diagnostic test administrator. The test informs students as well as their tutors of students' mathematical knowledge at the point of entering the university degree course.

The test covers fractions, quadratic equations, powers, trigonometric equations, simplification of equations, about 20 items in total. The emphasis is on testing for basic mistakes that students typically make over and over again. Students are required to enter the correct answer in a box adjacent to the question, and at the end of the hour hand in the entire Revision Test sheet.

There is no overall fitness level recorded for students. Students are not discouraged from doing the degree, for instance based on a poor test outcome. However, individual advice is given, and problems are discussed with the student. In particular, tutors get the diagnostic test results, and can thus identify students that will struggle with the course material. Tutors can then encourage those students to attend clinics and seek extra help.

Follow-up procedures includes office hours, mathematics clinics during lunchtime, as well as TRANSMATH on the web. Students are required to hand in work at lectures. The marks thus gained are not used to grade students, but simply as evidence of their skill.

Students may apply for exemption from certain courses. The decision whether exemption is granted is based on their Advanced Higher achievements.

Prior to arrival students are sent a copy of 'the red book', which gives them sample problems and exercises of the level they are supposed to have achieved. This has the advantage that it allows students to prepare for the test. However, students may also be frightened off by it.

### The Results

As the test has only been used twice, there is no data available from it as to how students' mathematical knowledge has changed over time. However, the personal experience of the test administrator suggests that there is probably not much difference over the last ten years. Students' mathematical knowledge over this period is poor compared to what is required at university entry level. However, today's students are probably better at presentations.

Mature students are generally doing better in the degree course, because they made a more deliberate choice to come to university. Female students are usually more diligent.

### The Barriers

As the test is only administered for the second time this year, there is not much departmental support for the diagnostic testing procedures. As such, the executing of the test relies on the effort of a dedicated individual. There is not enough money available for processing the test. Postgraduates are not available to help, as they are already busy with a lot of other marking.

### The Enablers

As the test happens in a relatively simple set-up (a more or less fixed paper-based test), it can be marked by the administrator. The test results are then looked at by students' tutors, rather than evaluated centrally.

### How Can Other Academics Reproduce This?

The test is freely available, and straightforward to administer. Please contact the institution for further information.

