

State Examinations Commission

Errors in 2013 Mathematics Papers

The State Examinations Commission (SEC) confirms that Question 8, on yesterday's Leaving Certificate Maths, Higher Level, Paper 2 contained an error. In addition, there were also errors on 3 other Mathematics papers, both Leaving and Junior Certificate, provided to candidates this year, some of whom were in the 23 schools involved in the Project Maths initiative, and some of whom were in other schools.

The SEC acknowledges that these errors may have caused some distress and confusion for the students involved. The SEC apologises for these errors which are most regrettable.

Details of the errors are set out below:

Leaving Certificate Higher Level Mathematics Paper 2 (Phase 2 and Phase 3) Question 8

- Question 8, on yesterday's Leaving Certificate Maths, Higher Level, Paper 2 contained an error. This paper was taken by all Higher Level candidates. The question included more pieces of information than were required to solve the problem. Taken in their entirety these pieces of information are not all mutually reconcilable. Depending on the combinations of data used different solutions would have been arrived at. We anticipate that many candidates are likely to have worked through this question without encountering a difficulty. However, if candidates had attempted to check their solutions using other information from the question they are likely to have encountered a contradiction. In addition, there is a potential ambiguity in interpreting the text of the question concerned, in that it could be interpreted in a way that is different from the information presented in the diagram. In the course of ensuring that no candidates are disadvantaged by the more significant error in the question, the SEC will also ensure that those who took the alternative interpretation of the text are not disadvantaged by having done so.
- The Irish version of this paper contained a typographical error which had been detected by the SEC after the paper had been printed and before the examinations. A correction was issued by the SEC to be read out by superintendents to candidates before the examination.

**Leaving Certificate Ordinary Level Mathematics Paper 1 (Phase 3)
Question 5**

- Under the Project Maths initiative, candidates in 23 initial schools sat a different Leaving Certificate Mathematics Paper 1 from all other candidates. Question 5 on last Friday's Ordinary Level Paper 1 examination for these candidates contained an error, in that it asked candidates to complete some tasks that are no longer on the syllabus for these 23 schools.

**Leaving Certificate Foundation Level Mathematics Paper 1 (Phase 2)
Question 10 (a)**

- On last Friday's Leaving Certificate Foundation Level Paper 1 examination for schools other than the 23 initial schools, there was a typographical error in question 10(a). This error was detected by the SEC after the paper had been printed, but before the examination. In considering whether a correction ought to be read out to candidates on the day of the examination, a judgment was made that the error was unlikely to negatively affect candidates, and that reading a correction was likely to cause unwarranted confusion.

**Junior Certificate Higher Level Mathematics Paper 1 (Phase 1)
Question 3(b)**

- On the Irish version of last Friday's Junior Certificate Higher Level Paper 1 for students in all schools other than the 23 initial schools, the phrase 'even number' was incorrectly translated as 'whole number'.

It has also been asserted that there were other errors across a number of papers in that the material concerned was not on the syllabus. The SEC is satisfied that all of the material referred to is on the relevant syllabus.

One of the core principles under which the State Exams Commission operates is that students cannot be disadvantaged as a result of an error on an examination paper. Therefore, the impact of error on candidates' answering is taken into account by the Chief Examiner when finalising the marking scheme for the relevant examinations.

The marking schemes for Mathematics will, as usual, be published along with those in all other subjects after the issue of results.

Leaving Certificate candidates have the option of viewing their scripts in order to see how the marking scheme was applied to their work and all candidates can appeal their results, if they feel this is necessary.

One of the key objectives of the SEC is the provision of an examinations system of the highest possible quality. Although the SEC has in place a range of procedures to enhance reliability and to minimise error, it is an unfortunate fact that errors can occur on examination papers from time to time. Sometimes errors are detected after the printing of the examination paper and in advance of the sitting of examination. These errors are read out to candidates in the examination centres from a list of corrections which is given to each Superintendent by the SEC. On occasion, errors are not detected in advance and come to light during or after the sitting of the examination.

The aspiration of any examining body, including the SEC, is to preside over a system that is completely error free. However, it is recognised, in examining circles, that this will always be an aspiration rather than a completely achievable goal.

In the context of errors such as these the SEC reviews its existing processes and procedures in order to strengthen its approach to Quality Assurance in the development of examination papers.

Ends.

Note for Editors

Quality Assurance in the Development of Examination Papers

The process of creating an examination paper encompasses a number of stages. These include drafting, setting, proofing, translating and signing-off stages. The development of examination papers is controlled through a range of guidelines and protocols which govern the work of the personnel involved. The Chief Examiner for each subject is responsible for the preparation of examination papers and their marking schemes, and has overall responsibility for the content, standard and quality of examination papers.

Contract personnel with relevant subject expertise and experience are appointed and comprehensively trained to draft and set the examination papers under the supervision of the Chief Examiner. At each stage of the drafting/setting process the examination paper is proofread and reviewed by the setting team in accordance with the Commissions procedures. The proofing process involves the review, revision and processing of edits to the draft material. Irish versions of the examination papers are subject to a further range of quality assurance measures. The SEC's protocols require marking schemes and, in subjects such as Mathematics, worked solutions to be prepared in tandem with examination papers and assessment grids are used to ensure that questions on examination papers are on the published syllabus.

Number of Students affected by these errors?

Errors have been identified on four Maths examination papers

- 1) Leaving Certificate Higher Level Paper 2, Question 8. Trigonometry – taken by students in both Project and non-Project Maths schools – Irish and English Versions - 15,132 candidates entered at this level.
- 2) Leaving Certificate Ordinary Level Paper 1 – Question 5 – Calculus. Taken by students in Project Maths schools – 1276 entered.
- 3) Leaving Certificate Foundation Level Paper 1 – Question 10.A – Functions. A. taken by students in non-Project Maths schools – 2441 entered.
- 4) Junior Certificate Higher Level Paper 1 – Question 3.b - Irish version only – taken by students in non-Project Maths schools – 1500 candidates entered

Mathematics Examination Papers prepared this year

A total of 44 different Mathematics examination papers were prepared this year; 20 at Junior Certificate and 24 at Leaving Certificate. This includes provision for students at different stages of the project maths roll-out as well as translations of all papers for student taking the examination through the medium of Irish. There is some overlap in content between some of these papers.

Independently of these 44 papers, a separate set of 44 contingency papers was also prepared for use in the event of a security breach or other such need.

The number of examination papers produced this year is double the normal annual requirement due to the particular stage in the roll out of Projects Maths.

Scale and complexity of the State examinations system

Running the examinations is an immense logistical operation. In a typical year the examinations involve over 116,500 candidates in over 4,900 main examination centres and 10,000 special centres. Over 250 different test instruments, 90 curricular and 15 non-curricular subjects, over 6000 examiners, 3 million individual exam papers comprising over 34 million pages, and just under 2m test items are involved in this process.