About the STEP paper (9 pages, 17/7/25)

Contents

(A) History

(1) STEP (Sixth Term Entrance Paper) started in 1987 (with a Specimen Paper in 1986). Originally it existed for other subjects as well, but since 2001 it has only been offered for Maths.

(2) Up to 2019, there were 3 STEP papers. From 2020, there have only been STEP 2 & STEP 3.

(3) The historical numbers of different types of questions have been as follows:

	Pure	Mechanics	Prob & Stats
1987 to 1993	Paper 1: 9 Paper 2: 10 Paper 3: 10	Paper 1: 4 Paper 2: 4 Paper 3: 4	Paper 1: 3 Paper 2: 2 Paper 3: 2
1994 to 2007	Paper 1: 8 Paper 2: 8 Paper 3: 8	Paper 1: 3 Paper 2: 3 Paper 3: 3	Paper 1: 3 Paper 2: 3 Paper 3: 3
2008 to 2018	Paper 1: 8 Paper 2: 8 Paper 3: 8	Paper 1: 3 Paper 2: 3 Paper 3: 3	Paper 1: 2 Paper 2: 2 Paper 3: 2
2019	Paper 1: 8 Paper 2: 8	Paper 1: 2 Paper 2: 2	Paper 1: 1 Paper 2: 2

	Paper 3: 8	Paper 3: 2	Paper 3: 2
2020 to 2024	Paper 2: 8 Paper 3: 8	Paper 2: 2 Paper 3: 2	Paper 2: 2 Paper 3: 2

(4) Syllabuses

These have been based on the syllabuses of the various English exam boards; with some modifications and additions.

Statistics questions have generally been confined to distributions of random variables.

	Paper 1	Paper 2	Paper 3
1986 to 2018	Based on A Level Maths	Based on A Level Maths	Based on A Level Further Maths
2019	Based on A Level Maths	Based on A Level Maths and AS Further Maths	Based on A Level Further Maths
2020 to 2024	n/a	Based on A Level Maths and AS Further Maths	Based on A Level Further Maths

(5) Calculators were allowed until 1996 (though most questions were better answered without them).

(6) There was a STEP Formulae booklet provided until 2018 (which included mathematical definitions and statistical tables).

(7) Bilingual dictionaries were allowed up to 2022.

(B) Current position (as at July 2025)

(1) Significant changes were made to the STEP syllabus in 2019, and the current syllabus is that contained in the document "STEP Mathematics Specifications for June 2025 Examinations – Version 1.2

(2) STEP 2 assumes knowledge of "Mathematics 1" (Content of AL Maths (and GCSE) – with some modifications and additions) and "Mathematics 2" (content of AS Further Pure - with some modifications and additions; especially Mechanics + Prob. & Stats).

STEP 3 assumes knowledge of "Mathematics 1", "Mathematics 2" and "Mathematics 3" (content of AL Further Pure - with some modifications and additions; especially Mechanics + Prob. & Stats).

However, the examiners reserve the right to set questions on topics not explicitly covered in the STEP specifications; in which case, appropriate help will be provided.

(3) According to the Official website, STEP 2 and STEP 3 are intended to be of the same level of difficulty.

(4) Both STEP 2 and STEP 3 now contain 8 Pure questions, 2 Mechanics questions and 2 Prob. & Stats questions.

Candidates are free to choose which questions to answer. Each question is worth 20 marks (but, unlike A Level papers, there is no breakdown of marks indicated in the question itself – as this would give away valuable information about the difficulty of each part).

(5) Calculators are no longer allowed.

(6) Formulae booklets are no longer provided. The specification includes an Appendix listing formulae that candidates are assumed to know.

(7) Bilingual dictionaries are no longer allowed.

(C) Nature of questions

(1) STEP questions will always be more complicated than Further Maths ones, and will never simply require a standard procedure to be followed.

(2) However, unlike many Maths 'problems' (such as those set by the UKMT), a STEP question will usually provide some hint as to how to tackle the hard part(s) of the question, by means of the introductory earlier parts. (See "Using an earlier part of the question".)

(3) There will usually be a 'point' to each question, which it will generally be useful to identify. Common ideas are:

(a) The question may be leading up to a significant result.

(b) Separate cases may need to be identified.

(c) A method may need to be extended to a more complicated situation.

(d) The student may be being tested on their ability to cope with unfamiliar ideas.

(4) Despite inevitable complications, it is generally the case that the best method of tackling a question involves something reasonably simple. Don't be afraid of trying the most obvious thing. The examiners don't set traps by tempting you to do something simple.

(5) Unlike A Level papers, candidates are free to choose which questions to attempt. The general recommendation is to attempt no more than 6 questions (and only the candidate's best 6 attempts will count). Candidates are not expected to have mastered all of the syllabus, by any means.

One unfortunate aspect of STEP however is that the questions often differ considerably in their difficulty, length (of the solution), or level of risk (for example, questions may or may not involve 'show that' results).

Depending obviously on personal preference, it is arguably very important for candidates to specialise in topics that are more likely to generate favourable questions. (See "STEP Exams - Preparation".)

(D) Official website

(1) The official website is www.ocr.org.uk/students/step-mathematics

The following items can be found by selecting 'Preparing for STEP' in the menu on the left:

(i) The latest specification.

(ii) Past Papers (back to 2014) and Official Solutions or Hints, together with Examiners' Reports.

Examiners' Reports often highlight students' shortcomings. Bear in mind though that many of the comments will relate to those students who don't do that well in the STEP paper.

However, the Reports can indicate questions that are unpopular and yet do-able with moderate preparation (eg a Probability question that only requires knowledge of the Poisson distribution).

(iii) “Advanced Problems in Mathematics” by Stephen Siklos (highly recommended).

Appendix I: Notes on topics included/excluded (not exhaustive)

[Please refer to the latest specification for the definitive up-to-date position.]

Mathematics 1

Mechanics

Centre of Mass: position of CoM will be deducible by symmetry (or given)

Mathematics 2

Mechanics

Oblique impacts not required in Mathematics 2, but are required in Mathematics 3.

Mathematics 3

Pure

Polar coordinates: It will be assumed that $r \geq 0$

Mechanics

Circular motion: Moments of Inertia will not be examined.

Prob. & Stats

The Covariance is not assumed knowledge (including the formula for $Var(aX \pm bY)$ where X & Y are not independent).

Generating Functions are no longer required.

Appendix II: Grade boundaries

The higher grade boundaries for the last 3 years have been as follows:

STEP 2

2024

To achieve a 2: 51/120 (17.7% of candidates)

To achieve a 1: 69/120 (13.7% of candidates)

To achieve an S: 93/120 (6.1% of candidates)

2023

To achieve a 2: 50/120 (16.7% of candidates)

To achieve a 1: 65/120 (15.4% of candidates)

To achieve an S: 90/120 (5.6% of candidates)

2022

To achieve a 2: 52/120 (14.2% of candidates)

To achieve a 1: 62/120 (15.8% of candidates)

To achieve an S: 81/120 (7.1% of candidates)

STEP 3

2024

To achieve a 2: 57/120 (16.4% of candidates)

To achieve a 1: 70/120 (23.8% of candidates)

To achieve an S: 93/120 (11.4% of candidates)

2023

To achieve a 2: 54/120 (14.2% of candidates)

To achieve a 1: 63/120 (23.9% of candidates)

To achieve an S: 85/120 (11.7% of candidates)

2022

To achieve a 2: 51/120 (17.1% of candidates)

To achieve a 1: 63/120 (22.8% of candidates)

To achieve an S: 82/120 (11.2% of candidates)