Example 9: The Cantor set

Subject: Mathematics: analysis and approaches and mathematics: applications and interpretation
Paper component: Internal assessment, standard level (SL) and higher level (HL)

Assessment

Criterion	A	B	C	D	E (SL)	E (HL)	Total (SL)	Total (HL)
Achievement level awarded	4	2	1	1	4	3	12	11
Maximum possible achievement level	4	4	3	3	6	6	20	20

Comments

Criterion	Comments
A Presentation	The exploration is well organized, has an aim. It addresses the target audience.
B Mathematical communication	Some mathematical communication is present but not all key terms are well explained, for example, zero length for the Cantor set. The tables to explain Hilbert's hotel do not represent infinite sets. On page 7 the student uses * for multiplication and the proofs are not set out mathematically.
C Personal engagement	The student has set out to learn mathematics that is beyond the course and has tried to explain the "research report" presented, however there is no authentic personal engagement. The student's own perspective is not presented.
D Reflection	Some reflection is seen in the conclusion, but this is limited.
E Use of mathematics SL	The mathematics is beyond the level of the course. Some knowledge and understanding is demonstrated, especially in the first part where countable infinite sets are explained.
E Use of mathematics HL	Best fit was used to award E3. The mathematics explored is beyond the level of the course. Although the first part of the exploration was understood by the candidate, the mathematics relevant to the exploration aim is not well understood. Explanations are missing and the proofs are more intuitive and lack rigour.
General comments	This type of exploration (a research report) is rather ambitious and it is very difficult for a student to understand and explain in full within the page limit. It may have been a better title for an extended essay.