

# Hard maths for HSC doesn't add up



**Christopher Harris**  
Education reporter

Teenagers who choose to study harder mathematics in their HSC get almost the same ATAR as those who receive identical marks in a much easier course.

Education analysts say it is a quirk of the system which effectively punishes ambitious students because there is little pay-off for tackling higher-level mathematical concepts which students will require for university study.

An HSC mark of 80 in mathematics standard translated into a nearly identical ATAR compared with the same mark in the more rigorous advanced course, according to the Universities Admissions Centre ATAR calculator.

Mathematical Association of NSW consultant Miriam Lees said the lack of boost to a student's ATAR for doing a much more difficult course was failing to reward the effort required.

"There isn't an ATAR boost for the advanced course and the effort required compared with the standard course," she said.

Because universities had removed maths prerequisites to attract students, Lees said the incentive to study trickier maths no longer existed. Meanwhile, schools were steering students toward easier study options because they were more likely to score in the top band, which improved a school's ranking in league tables.

"Unless there is an ATAR boost, unless the universities say 'you can't do those courses' [without advanced mathematics], then the students need the ATAR, and un-

fortunately advanced maths is the casualty of all of those competing needs," she said.

Studying advanced mathematics in high school gave students a foundation of calculus skills which were required across degrees in economics, finance, chemistry and engineering. "There is a far greater chance of success in first-year university courses if [students] have done advanced mathematics," Lees said.

To achieve an HSC mark of 80 or more, students demonstrate the

skills set out by the HSC examiners, which is a much higher bar for students to meet in the advanced course due to the complexity of the topics studied.

However, Universities Admissions Centre scaling committee chair, Macquarie University Professor Rod Yager, said the system was working perfectly if ATARs obtained by students who get a mark of 80 in standard and advanced mathematics were similar.

"This is how the system is supposed to work. The same standard of performance, regardless of the choice of subject ... should result in the same ATAR," he said.

"There have been many examples of students who have not taken mathematics extension 1 (and who are not accelerants) who have obtained mathematics advanced HSC marks of 98, 99 or 100 and so have been able to engage effectively with even the most difficult aspects of the examination."

Former mathematics teacher Robin Nagy, from Academic Profiles, an education consultancy that works to help schools optimise academic outcomes, said that in

reality that was not the case.

"The top band will typically go to those who are also doing maths extension 1 or those who benefited from studying extension 1 in year 11," he said.

He said the NSW Education Standards Authority (NESA) set the exams tough and urged HSC examiners to move towards "strengths-based" system of assessment, which allowed students to demonstrate their knowledge rather than the current standards-based system.

"It is just so demotivating for students ... but when they hit the exam, they come out with 50 per cent," he said.

A NSW Education Standards Authority spokeswoman said students had appropriate opportunities to demonstrate knowledge, skills and understanding in the HSC mathematics exams.

"NESA does not scale HSC marks. Rather, a raw exam mark is aligned to a performance band. Each band reflects what a student at that level of performance typically knows, understands and can do," she said.

English Advanced	80/100
<b>Mathematics Standard 2</b>	<b>80/100</b>
Biology	80/100
Business Studies	80/100
Modern History	80/100
PDH&PE	80/100

**ESTIMATED ATAR**  
**78.35**

English Advanced	80/100
<b>Mathematics Advanced</b>	<b>80/100</b>
Biology	80/100
Business Studies	80/100
Modern History	80/100
PDH&PE	80/100

**ESTIMATED ATAR**  
**79.35**