

# Maths row

VCE mathematics are being dumbed down by the over use of calculators, according to a top education consultant.

A new generation of CAS (Computer Algebra System) calculators can perform algebra and calculus computations for students.

Maths education consultant Russell Boyle said the prevalence of calculators meant some students could get through their school career without being able to calculate simple percentage problems by hand.

He said most of the VCE maths exams — including the exam for less advanced maths students — allowed the use of CAS calculators.

In four of the six exams, students

## Calculator 'over use'

had calculators in their hands most of the time.

Writing in the Mathematical Association of Victoria journal, Mr Boyle said: "Many CAS-dependent test items require students to do little more than merely 'push buttons' to produce correct answers.

"The trend in four of the six VCE mathematics examinations is moving away from testing student ability to do the mathematics by hand, using pen and paper.

"Instead, it seems to be moving inexorably toward testing student ability to push buttons and to interpret machine-generated output."

Mr Boyle said Victoria had pushed ahead of other states in allowing the use of CAS calculators.

"CAS calculators are an important tool for students, but they cannot replace a basic understanding of mathematics," he said.

"CAS should be about 10 per cent of assessment and curriculum time, but it is much more than that and it worries me.

"I'm calling for less CAS emphasis in exam two of Maths Methods and Specialist Maths and in Further Maths — one exam should be calculator free."