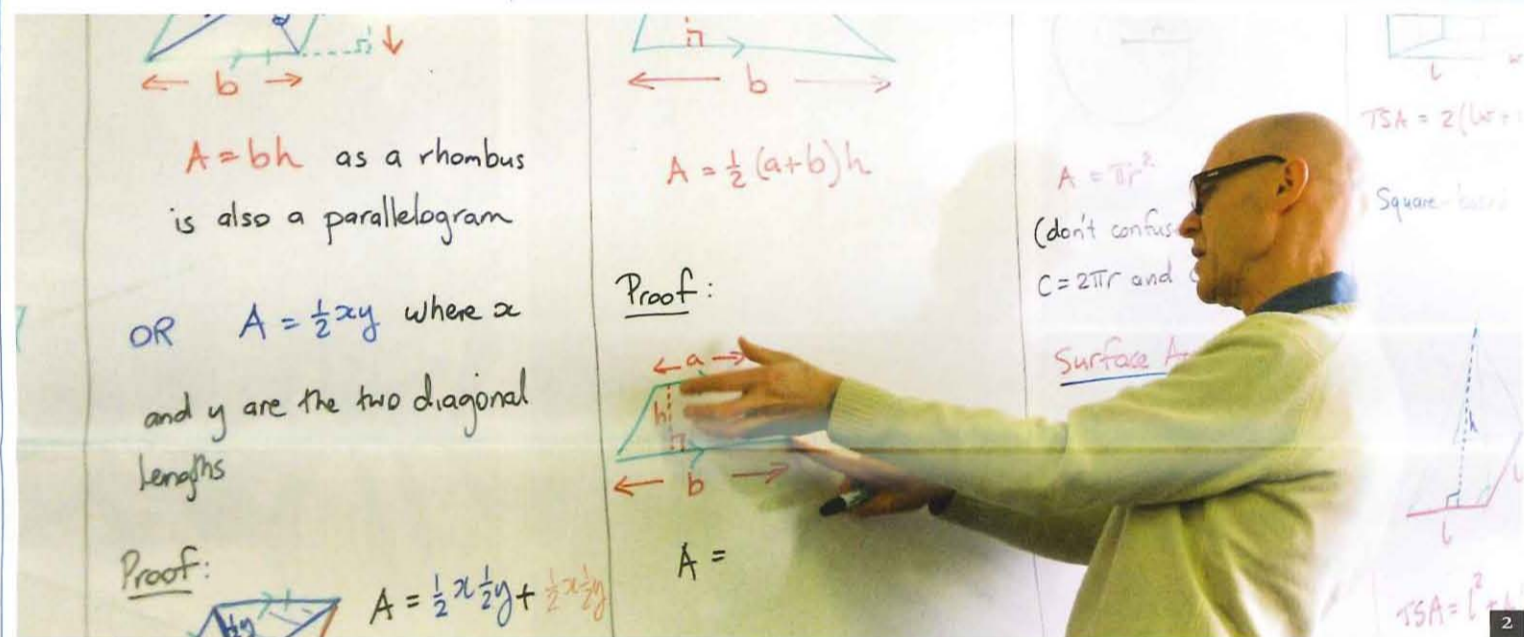
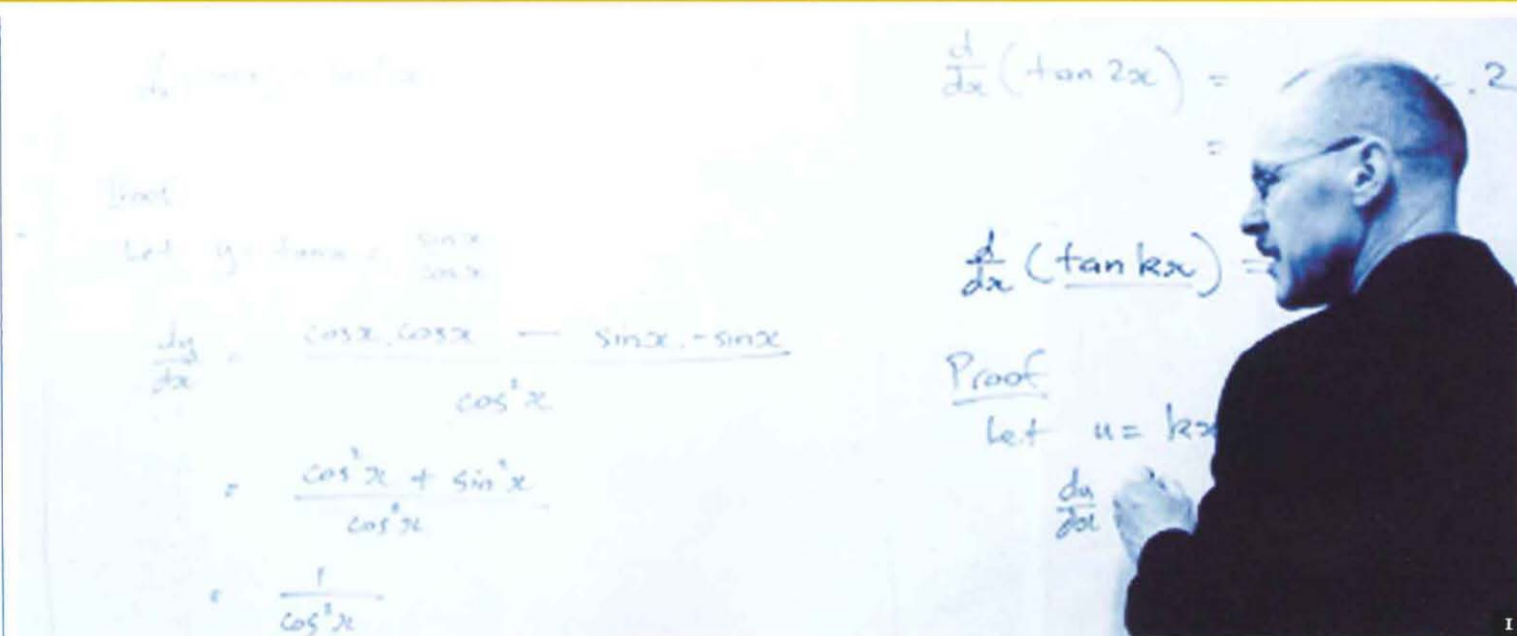


Mr Boyle. Man of means.

Russell Boyle, Dean of Mathematics, arrived at Ruyton in 2003 from Glen Waverley Secondary College, where he had been Head of Maths. He is known around the school for his passion for mathematics and for his poetry.

RR We are constantly told there is a shortage of maths teachers. Is this true?

RB Yes, there is a nationwide shortage of good mathematics teachers. Many of the nation's primary school classes are taught by teachers with no specialist knowledge in the subject, many junior secondary classes are taught by non-mathematics teachers and the country lacks skilled teachers who are able to teach senior secondary mathematics. The parlous state of the profession is due in part to the



RR How do you help girls decide which maths they should be doing?

RB The monitoring is rigorous and we have access to a number of objective measures such as the Edutest and the Australian Mathematics Competition, which all the girls do. The Mathematics Department also has a database that we all add to each semester. So we have a wealth of background information on all of the girls.

Ruyton is a small school so we know the girls well. Enormous attention is accorded to each girl. We discuss every girl before each parent teacher evening. I've never known this to happen in another school. And we don't give up on girls easily!

RR And your advice to girls about maths?

RB Keep all your options open for as long as you can and do the highest standard of mathematics you are capable of, for you do not know when you may call upon these skills later in life.

RR You seem passionate about maths?

RB My passion is to share my subject with young people, to enthuse them to further their own knowledge and to prepare them for what they will need for their careers and for their life as citizens.

RR And your other passion? Poetry?

RB All my poetry was written this century. I came to poetry from my love of writing. I will sometimes use poetry in class, as a different way to engage girls. I hope my poetry enables them to see the humanist behind the mathematician. 'To be a teacher, you must fit the box. To be extraordinary, you must escape the box.'

The day after issuing Year 7 with a week's notice for a measurement test, which in the girls' collective view was insufficient time in which to prepare, I walked into class to find this poem on the teacher's desk. It was written on a sheet of paper and folder into the shape of a rhombus:

*Compassionate: the way you teach
No rules of math you'll ever breach
From algebra to measurements
For our errata we shall repent
And when understanding is a pain
Carefully you will explain
That pi's irrational to the class
And geometry is hard on our CAS
Alas, but when it comes to tests
Time we need to do our best
In order to gain above ninety-three
Revision time is what we need
We beg and plead, oh see the light!
Or else we shall have sleepless nights
Our brain cells dry like osmosis; cruel
So please Mr Boyle - we know you're cool!*

Rumour has it the poem was written by PEARL PAGUIO, DEANNE XU AND ELAINE CHAN Year 7

1 and 2. Mr Boyle keeping his cool when problems heat up

wide applicability of the discipline; highly skilled practitioners will often secure work outside of teaching. It is also due to a dearth of young people studying Specialist Mathematics at secondary school. This reduces the pool of people who could potentially return to the classroom as teachers. It is a vicious circle that may yet get worse.

RR Why has there been a drop in the study of Specialist Maths?

RB Specialist Mathematics is seen by many students as being too hard, requiring too much work and demanding too much of their time. This perception has been exacerbated by our universities' recent removal of Specialist Mathematics as a prerequisite study for engineering. In 2005 we had 13 girls in the Year 12 Specialist Mathematics class. Last year and again this year we've had only five girls in these classes. Meanwhile the number of girls enrolling in Year 12 Further Mathematics has steadily increased.

RR Why should girls consider Specialist Maths?

RB The boards of public and private companies invariably consist of professionals with sound backgrounds in law, economics, accounting and engineering. The feedback I have received from past students who have gone on to study engineering at university, is that the study of Year 12 Specialist Mathematics is essential for eventual success. Engineering undergraduates with no prior exposure to Specialist Mathematics are disadvantaged and need to undertake a series of bridging courses.

Many girls are reluctant to consider engineering, as they think it's dirty and some don't wish to wear a hard hat. I often find myself saying to such girls that 'If you enjoy mathematics and if you are good at it then you should pursue it as far as you can and, in so doing, keep engineering open as a potential future career.' I also advise girls to study Specialist Mathematics in the hope that some will return to the classroom as teachers. 'If you

study Specialist Mathematics in Year 12 then you'll be well-equipped to teach the subject at school level.' I'm confident that by the time our current students are of teaching age the financial rewards offered to teachers will have increased substantially.

RR Why does maths get a bad name with students?

RB Mathematics is hard! It can be difficult to learn. Older than recorded history, Mathematics has developed, through the ages, into a complex, sophisticated body of knowledge which pervades all aspects of our lives - as citizens, at home and in the workplace. Whilst the foundations of the subject are in number, space and data, mathematics does not manifest itself in any real physical way. It is inherently abstract, which makes it so applicable across the full spectrum of our lives. Its abstractness is also what makes it so difficult to learn. I have been doing mathematics all my life but I don't go through a week here at Ruyton where I don't learn something new about the subject, where I haven't been challenged by a girl's question or a new way of thinking about or explaining a concept. Mathematics is a discipline you can never master but one in which you can always improve, given perseverance and girls are good at that - so long as they don't get lost along the way to other interests.

RR Is this what it takes to be good at maths?

RB The secret for success in mathematics is much the same as the secret for success in life: perseverance. And perseverance requires time! Even talented girls fall behind when they fail to allocate sufficient time to their study of mathematics.

RR It seems girls are less interested in maths than humanities. Is this true?

RB Conventional wisdom warns against stereotyping but girls do gravitate toward the literary disciplines; when the going gets tough they tend to favour their natural bent.

The national tests in years 3, 5, 7 and 9

provide some evidence that boys outperform girls in numeracy while the reverse is true in literacy. So you do lose many talented girls to the reading and writing subjects at the expense of mathematics and that is a great tragedy.

RR How have you structured the maths courses at Ruyton?

RB The girls here are wonderful to teach; they want to learn and they expect to work. We have introduced after school help desks for senior, middle and junior secondary school students and have made the desks part of teacher allotments. We have introduced an accelerated program from Year 6, an extended program commencing at Year 7 and a modified program which begins at Year 10. We have also tried to reduce class size wherever possible so that girls enjoy a greater proportion of their teacher's time. The selection process for the Accelerated and Extended programs is objective and rigorous and girls need to maintain a test average of at least 70 per cent in order to remain in these programs.

RR Might some girls lose heart from this?

RB The 70 per cent performance criterion does put pressure on girls but it is consistent with our philosophy that no matter how good you are, you have to work hard and persevere to succeed. And there is no disgrace in moving from an accelerated or an extended group back into a mainstream class, as all girls can access our Year 12 mathematics subjects from our mainstream classes. Just this morning we were awarding prizes to girls who reached the top five per cent in the University of Melbourne School Mathematics Competition but it was their fourth attempt at the award. Last year our school Dux won a prize in this competition but only after five earlier unsuccessful attempts. I often find myself quoting the final two lines from one of my poems to my students: 'You don't have to win to win, but you must lose to grow.'