I was born on 15 January 1955 and weighed in at 9lbs 10oz and my mother in her memoirs mentions that visitors said I had a very intelligent forehead! My parents had met in a TB sanatorium during WWII and had been advised not to marry, then not to have children, due to the fact that they did not expect my parents to live very long – my mother was the first person in Liverpool to have a pneumonectomy (her right lung was removed in March 1949 when she was given a 30% chance of surviving the op) and she is still alive! Doctors did not always appreciate the human will to survive. Neither of my parents went to university and my mother’s education was interrupted by the war. My father was invalided out of the RAF due to TB and became a watch and clock repairer like his father, my mother helped with the shop displays (she is very artistically talented and her handiwork is sans pareil) and mended necklaces.

It appears I was rather accident prone at infant school, the worst instance being when a globe around the light bulb fell from the ceiling and shattered on my head when I was 5. My mother was advised to take me to hospital to get checked up, which was something I hated as it meant missing school which I loved. It was at about that time I started counting at night to see how far I could go, each night continuing from where I had left off the night before. I cannot remember exactly how far I got, but do know it was into the ten thousands.

I enjoyed all subjects at school, but mathematics was my favourite. I was allowed to work at my own pace after a couple of years and always wanted to be at least a page beyond the others in the class. I had no problem with learning tables and could not understand how some of my friends had problems with them. When I was 8 Mr Quine (my teacher that year) asked me what prize I would like that year and so I asked for a maths book: I still have that book today. It was The Giant Colour Book of Mathematics by Irving Adler. This gave me my first encounter with rabbits and Fibonacci numbers, prime numbers and imaginary numbers and hooked me into recreational mathematics.
and reading mathematics for pleasure. Of course it was only later I came to understand more about imaginary numbers.

At the age of $10\frac{1}{2}$ I was diagnosed with type 1 diabetes, much to the distress of my parents, but that has caused me no hardship over the years, apart from having to spend over a week in hospital to get stabilised at the time. Missing that much school caused me far more pain than having to do my daily injections of insulin! Weighing out my food and calculating the grams of carbohydrate each meal presented me with some practical maths – this was in the days before foods had their nutritional breakdown on the packet.

In the spring of 1966 my headmaster suggested I try for a Margaret Bryce-Smith scholarship to go to the Liverpool Institute, a grammar school established in 1825 in Liverpool. Generally, between two and four were awarded each year. The first exam was on 4 March and I was recalled for a further exam on 10 March. That second arithmetic exam was hard! (see Figure 3). I remember sitting looking at the paper thinking there was nothing on it that I could do and panicking. How-
ever, after about 45 minutes I started writing and the ink just flowed. I could have done with a bit more time, but it was at that point I realised that sometimes the subconscious kicks in and makes connections – I imagine research students get similar inspiration from time to time. I was awarded a scholarship and to celebrate the headmaster at the primary school gave everyone a half-day holiday! My teacher that year was Miss Cross (she never was) and I never felt I had a better one. Both my brother and I finished the last year of primary schooling with the top marks in the summer examinations. He hated school all through primary and secondary as his talents never seemed to be acknowledged. He was incredibly interested in natural history and inherited my father’s musical talent (though he hated piano lessons – I didn’t particularly enjoy them apart from the theory, which seemed very mathematical to me), being able to pick up a tune and play it on various instruments. He never liked being told what to do, especially if it held no interest for him.

At secondary school I loved mathematics apart from in my second year (age 12) when I had a teacher who seemed to take great delight in demeaning boys. He insisted I had torn pages out of my homework.
THE LIVERPOOL INSTITUTE
Margaret Bryce Smith Scholarships 1966

ARITHMETIC PAPER B

Time allowed: 1 hour

You are not expected to answer all the questions.
You may answer them in any order.

You must give full working and explanation with each answer.

1. Add the first one hundred numbers of the set of numbers: -4, -2, 8, -4, 8, -8, .... What is the 100th number? Is it to be added or subtracted?

2. The first three numbers of a set S of numbers are 1 + 1/2, 1 + 1/2, 1 + 1/2. The first three numbers of a set T of numbers 1 - 1/2, 1 - 1/2, 1 - 1/2. Write down the twentieth number of the set S, and the twentieth number of the set T.

3. At a party five guests tried to guess the weight of a cake.

   Their guesses were: 5 lb 8 oz, 3 lb 10 oz, 2 lb 14 oz, 7 lb 7 lb 5 oz. Actually none of them was right. Only two were more than three ounces out, and they were out by 7 oz and 9 oz. What was the weight of the cake?

4. You have ten 51 notes. A man offers you 4d for the first, 8d for the second, and so on, doubling the amount for each successive note. Would you accept the offer? (Give your reasons). How much would he have to pay for the last note?

5. If there are 25 stations on a railway line, how many different tickets are required to connect every station with every other station?

6. The numbers on the opposite faces of a dice add up to seven. If the top face show the number four, what number is on the bottom face? Give the numbers which are opposite to each other on the other faces.

7. Thirty-two mothers took their 47 children to a fete. One mother had 5 children, another had 4, some had 3, some had 2 and some had only one child. Find the number of mothers who had one child, giving all possible solutions.

8. (AB) is used to describe a line which begins at a point A and goes on for ever in the direction from A through the point B. C, D, E are other points on the line. State three other ways of describing the line. Give one description of the opposite direction on the line.

Figure 3. Arithmetic Paper, 1966
exercise book (I had not – I think he (or someone) had taken out some pages for something else at some point and it had got mistakenly put back in amongst the pile of new exercise books) and made me feel like dirt. However, the following two years (aged 13–15) I had Mr Roberts who I felt was superb: he never put anyone down and his lessons were always the same: one or two questions explained on the board which you wrote into your book, then five questions (often written on the board, sometimes from Durell’s books) for you to tackle. Homework was nearly always a revision exercise from Durell. The eight lessons in a day were 35 minutes long and so you had mathematics every day – a little and often, which is how I believe it should be taught.

Near the start of my fourth year (aged 14) I was asked if I wanted to do my O levels early, at the end of that year. This was offered to a few of us that were thought to be Oxbridge candidates in the making, the
thinking behind it was that it meant you still did A levels after two years, but could stay on an extra term to sit Oxbridge entrance exams and then go to university at the same age as your peers. I was happy to do that, though it did involve a lot of extra study, cramming two years learning into one. That was not a problem with the mathematics: I worked through booklets of past papers and loved every minute of that, though could not understand why you could not cancel the d’s in \(dy/dx\) and the multiply by the \(x\) to find \(y\)! (I had not met any calculus at this point). Mr Roberts explained and I was away with differentiation and integration was a doddle as the inverse operation. I passed all my eight O levels (only mathematics resulted in grade 1, French and Russian being my lowest grades (5 in each and I only think I passed the Russian because I had a Russian penfriend for three years and translating his letters gave me some set phrases I could use)).

![Figure 5. My spring term 1970 report. Most of the exam exams were O level mock results.](image)

I wanted to do mathematics and further mathematics in the sixth
form, but I was the only one who wanted to do further mathematics, so they would not contemplate that. I protested to the headmaster and was allowed to do it if I joined in with the upper sixth further mathematics class. So it was sink or swim and I spent many hours at home mastering both Elementary Analysis by Dakin and Porter and Further Elementary Analysis by Porter before moving on to Further Mathematics by Porter in the second year. I loved the pure mathematics side and rarely had problems there, but the applied mathematics (Humphrey and Topping) I found more difficult. My teachers were Mr Roberts (once again) and Mr Cresswell, who was a lot younger than Mr Roberts. I finished with an A in mathematics, A in physics and a B in further mathematics (and a B in general studies, but everyone sat that and after a term of it we skived most of the lessons – it seemed just to be general knowledge) and thought I knew everything about mathematics.

I still have all my school reports and mathematics exercise books from secondary school – homework was generally marked by the teacher (red tick or cross, few comments apart from good, excellent etc.) and classwork sometimes marked.

I did not do well in the Oxbridge term – I rested on my laurels too much and didn’t get in. However, since I had my results I was accepted at Durham University. My first year there was a disaster: I didn’t understand all the set theory and felt completely out of my depth. I scraped through the first year basically because of my total marks being boosted by the numerical analysis paper (I could work with the numbers but theorems and proofs left me cold). However, I had lost interest in the mathematics and so in my second and third year studied mathematics and geology (in the ratio 2:1). I realised I had to spend more time studying the mathematics and recovered a lot of my confidence as it somehow seemed more concrete. It was at this point I realised I was not cut out to be a research mathematician like some of the friends I had made at university hoped to become.

Since I caught my fiancée filling in a PGCE application form one day in our third year I decided I’d do that as it would put off finding a job for another year. This was the second best decision in my life (the first being the decision to get married before we did the PGCE). School mathematics is where my love of the subject lies and it has been a privilege and pleasure teaching many students over the years.
About the Author

Peter Ransom is is the Chair of Council (and a Past President) of The Mathematical Association and a semi-retired freelancer. He has worked with Bath Spa University’s School of Education from 2010 to 2015 and works with a variety of mathematics teachers as part of The Prince’s Teaching Institute. Peter is on the Education Committee of the LMS, a Fellow of the IMA and also belongs to the ATM and BSHM. He was involved with the Bowland Maths initiative as project leader for the sundials case study.

Peter Ransom

Peter spent over 30 years teaching secondary mathematics in state comprehensives and left the classroom in 2010 to integrate more into family life and the professional associations, to do more research and to attend conferences without having to worry about missing school time. He takes risks. He has enjoyed mathematics all his life and tries to pass on that enjoyment to all he meets. He has been known to travel around the country with a cannonball and sword.

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