Mathematics and joint schools

August 2021

Dear Fresher,

We hope you are continuing to enjoy mathematics, and looking forward to coming to Oxford in October. To help you to hit the ground running please consider the example sheets at https://www.maths.ox.ac.uk/study-here/undergraduate-study/practice-problems. These are on topics which you will be expected to know something about. Probably for most people there will be some gaps, so this is an opportunity to fill them. Please also look at the page `Bridging the gap' available at https://www.maths.ox.ac.uk/study-here/undergraduate-study/bridging-gap. It is aimed at year 13 students who have been accepted to read for one of the Mathematics degrees, joint school or Computer Science.

'Mathematical Techniques' by D.W. Jordan and P. Smith, (fourth edition), OUP 2008, ISBN 978-0-19-928201-2, covers the topics in the same order as the sheets, and will also be useful for the first year work in the Oxford course, but there are plenty of good alternatives. We suggest you write out solutions to some of the questions, and make sure that you could do so for nearly all of them if necessary.

It would also be helpful if, over the summer months, you could make a start on university mathematics. We hope you will find time to carefully read C. Batty, 'A Guide to Studying Mathematics at Oxford University', which can be found on the web at https://www.maths.ox.ac.uk/system/files/attachments/study_public_0.pdf.

In addition, you may like to read some popular maths books. Some suggestions are

On general mathematical topics:
- Ian Stewart, The Problems of Mathematics (OUP); Keith Devlin, The Millennium Problems (Granta); W.W. Sawyer, Prelude to Mathematics (Penguin).

On specific topics:
- Prime numbers: John Derbyshire, Prime Obsession (Joseph Henry Press); or Marcus du Sautoy, Music of the Primes (4th Estate).
- The four-colour theorem: Robin Wilson, Four Colours Suffice (Penguin)
- Fermat's last theorem: Simon Singh, Fermat's Last Theorem (4th Estate).
- Codes and cryptography: Simon Singh, The Code Book (4th Estate).
- Music and maths: John Fauvel, Raymond Flood and Robin Wilson, Music and Mathematics: From Pythagoras to Fractals (OUP).
- On history of Mathematics: Dirk Struik, A Concise History of Mathematics (Dover), and Stuart Hollingdale, Makers of Mathematics (Penguin).

We hope you have a good summer. There is no need to spend all of it on academic work!

Yours sincerely,

Prof Helen Byrne
Prof François Caron
Prof Andras Juhasz