Year 13 STEP Preparation Classes and Year 12 Maths Problem Solving Classes at the University of Warwick

Year 13 and Year 12 students are invited to join a series of maths problem-solving sessions taking place on Wednesdays from 4.00pm to 6.00pm at the University of Warwick from January 2018.

Year 13 classes will focus on preparation for STEP examinations. There will be an emphasis on

- providing insight into the type of thinking needed to solve problems successfully

- building a knowledge-base of useful techniques, facts and 'tricks'

- producing high-quality written explanations of solutions.

Year 12 classes offer students the opportunity to develop their problem-solving skills by trying out challenging problems that require deep mathematical thinking. Attending these sessions will enrich year 12 students' mathematical experience and support the work they are doing in school/college.

Year 12 students will look at problems from a range of sources including Mathematics Admissions Test (MAT) which is used for entry to Oxford University.

The sessions are not just for students who intend to sit any of STEP, AEA or MAT or even just for those planning to study maths at university. They are for anyone who is studying A-level mathematics and who enjoys solving challenging problems.

Sessions will take place in university teaching rooms; there will be mathematics undergraduates at each session and students will be able to ask them about applying to or going to university.

There will be 15 sessions for year 13 students running from January 2018 to May 2018 at a cost of £50 per student. There will be 10 sessions for year 12 students running from January 2018 to Easter 2018 at a cost of £30 per student. The cost of the course has been maintained at the same level as last year thanks to Further Mathematics Support Programme funding.

WHO? Year 12 and Year 13 students who enjoy maths and solving problems. The focus of the year 13 classes will be preparing for STEP examinations but it is not necessary to be sitting STEP examinations to attend.

**WHEN?** 4.00pm to 6.00pm on Wednesdays starting on Wednesday 17th January 2018.

WHERE? Mathematics Institute, University of Warwick.

If you have any questions or want to register students for the classes then please e-mail R.M.Lissaman@warwick.ac.uk .

Some problems for you and your students to try!

These are reproduced with the permission of the United Kingdom Mathematics Trust http://www.ukmt.org.uk/ and feature in "A Problem Solver's Handbook" by Andrew Jobbings. All students attending the sessions will receive a free copy of this book.

The diagram shows a square ABCD and an equilateral triangle ABE. The point F lies on BC so that EC = EF. Calculate the angle FEB.

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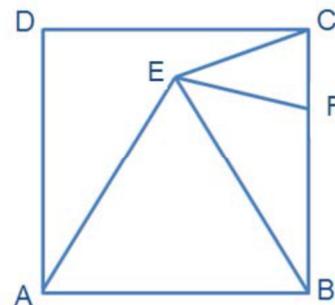
A particular four-digit number N is such that

a) the sum of N and 74 is a square; and

b) the difference between N and 15 is also a square.

What is the number N?

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Sam wishes to place all the numbers from 1 to 10 in the circles, one to each circle, so that each line of three circles has the same total. Prove that Sam's task is impossible.