

Focus of the Month

December 2016

Post 16: Problem solving skills and enrichment



This month we are focusing on the events, resources and professional development that the FMSP offers to students, teachers and schools to develop higher level problem solving skills and provide enrichment for post 16 students.

Events

Regular Problem Solving Classes

This year, the FMSP are running [regular problem solving classes for year 12 and 13 students](#) in more than 30 venues across the country. Each series of classes features 10 to 15 sessions that focus on developing problem solving skills in a variety of A level topics. Year 12 students develop their skills using problems that build up from simple starting points to the sorts of problems used for the Maths Admissions Test (MAT) used by Oxford University and Imperial College, London and the Test of Mathematics for University Admission (TMUA) piloted by Durham University this year. Year 13 students focus on the problems that build up to the level required for the Sixth Term Examination Papers used by Cambridge University and Warwick University.

One Day Problem Solving Conferences

The FMSP also run [one day problem solving conferences](#) for both students and teachers. These give students initial information about what is expected by universities that ask for or recommend that students sit one of the extra entrance examinations. The students get to work through a variety of problems including challenges from the Liverpool Fun Maths Roadshow, questions from a variety of Mathematical Olympiads and shortened STEP, AEA and MAT problems. Teachers attending these conferences spend some time solving problems with their students as well as receiving some



professional development in preparing students for the STEP, AEA, MAT and TMUA examinations.

Online Student Support

The FMSP with MEI provides [online support](#) for students preparing for the STEP and AEA papers. This support runs from February to June each year. The application process for 2017 will open in December 2016.

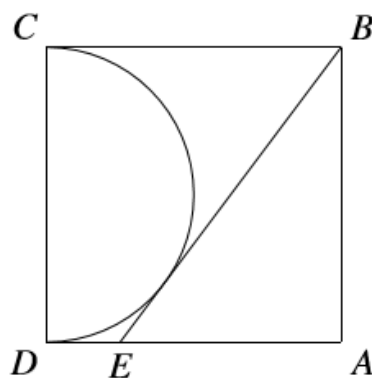
Online support for students [preparing for the MAT](#) runs from September to November each year. The application process for 2017 will open in June 2017.

Resources

We have a range of [A level resources](#) specifically designed to support teachers and students in level 5 mathematics. These include [mechanics](#) resources for use with a [Dynakar](#) as well as a link to the [Mechanics in Action](#) workbook.

The resources on our [A level Problem Solving](#) pages can be used to help students prepare for problem solving at A level and beyond. These include A level groupwork problems and topic based questions to develop year 12 problem solving skills. For students wishing to develop their skills further, there are five units from problem solving masterclasses.

The [Senior Team Maths Challenge materials](#) provide an excellent source of problem solving materials to engage, stretch and challenge students across a wide variety of topics.



ABCD is a square with side length 1. A semi-circle with diameter *CD* is drawn on the interior of *ABCD* as shown. The point *E* on *DA* is such that line *BE* is a tangent to the semi-circle.

What is the area of the triangle *ABE*?

Professional Development

The FMSP will runs several national programmes of CPD to support teachers helping students to develop problem solving skills and to [prepare for STEP, AEA and MAT](#) examinations.

Details of events can be found on the regional events pages under [Regions](#) or by going to [STEP/AEA/MAT events](#).

The programmes are:

- **Supporting students with STEP and AEA Mathematics**

This is either a one-day or two-day course for teachers who would like to introduce year 13 students to deeper mathematical problem solving skills.



- **Incorporating mathematical problem solving alongside the regular curriculum during year 12**

This course demonstrates how to incorporate problem solving materials during year 12.

- **Student and Teacher Problem Solving Conferences**

At these events students and teachers look at various aspects of problem solving skills. Teachers, who accompany their students to these events will work with their students on problems as well as receiving some separate professional development.

- **Live Online Professional Development**

Our online professional development course 'Supporting students for STEP & AEA' is designed to introduce teachers to the main aspects of AEA, STEP I and II, to advise, support and help teachers who wish to prepare their own students for STEP and to provide opportunities to interact with the course tutor and other participants in a small group to discuss subject content, resources and teaching ideas.

This course of 6 weekly sessions is available on request by completing the expression of interest form on the [LOPD page](#). There is an instance of the course open for applications currently, beginning 16th January 2017.

The problem solving aspects of the new 2017 A levels have been highlighted and extended in the newly written LOPD course suites so that all courses include regular examples of problem solving practice. The KS5 Coordinators Development course includes support for KS5Cos in embedding problem solving and extension across the post-16 curriculum.