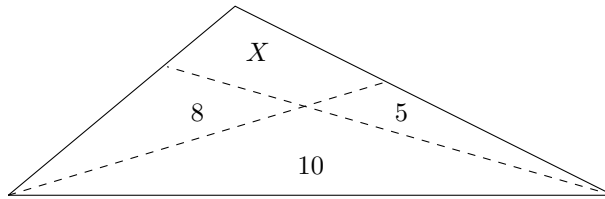


## Year 12 mathematics problem solving course 2023-2024.

*Challenge problem.* The triangle below has been divided into four regions. The areas of three of the regions are shown. Find the numerical value of the area  $X$  of the fourth region.



### Course aims and description

The long running **University of Leicester/AMSP year 12 mathematics problem solving course** is intended for students whose extant enthusiasm, engagement and ability with the subject is already at a high level. The **primary** aim of this course is the further development of such students' mathematical insight, thinking and problem solving strategies. Participation in this course will enhance such students preparation for the MAT, AEA and STEP and similar examinations. Most of the problems in the **calculator free** course are unstructured and challenging and based on the y12 pure mathematics course.

- This course will be offered as a **face-to-face** class format with a maximum intake of 25 students. The face-to-face format consist of 12 classes each of 1.5 hours duration (**4.30 to 6 pm on Mondays**), in university venues, between late September 2023 and April 2024. Prior study materials are provided to prepare students for each problems class.
- Students who attend regularly will obtain a School of Computing and Mathematical Sciences Certificate of Participation. Students who attend regularly and are successful in the course assignment will obtain a School of Computing and Mathematical Sciences Certificate of Achievement.
- **There is an application process. Students who successfully solve a set of problems in the application process will obtain a place on the course.** Students should email [mathsor@le.ac.uk](mailto:mathsor@le.ac.uk) to apply for a place on the course.
- Students who apply late will be directed to alternative AMSP online courses. In *very exceptional* circumstances up to 6 students can be registered for the University of Leicester distance format of the course, which involves the same materials as the face-to-face option but with the **addition** of hints files. Students who are on the distance option will have to submit solution attempts of all problems in each problem sheet to signify attendance: comprehensive feedback will be given to submitted work.
- There is no course fee.

### Course schedule

Class topic:	Date
Algebra 1	Sept 25
Coordinate Geometry 1	Oct 9
Series 1	Nov 6
Calculus 1	Nov 20
Algebra 2	Dec 4
Coordinate Geometry 2	Dec 18
Series 2	Jan 22
Trigonometry	Feb 5
Logarithms	Feb 26
Integration	March 11
Optimisation	April 15
Roots of polynomial equations	April 22