The Scottish Mathematical Council

www.scot-maths.co.uk

MATHEMATICAL CHALLENGE 2015-2016

Entries must be the unaided efforts of individual pupils.
Solutions must include explanations and answers without explanation will be given no credit.
Do not feel that you must hand in answers to all the questions.

CURRENT AND RECENT SPONSORS OF MATHEMATICAL CHALLENGE ARE
The Edinburgh Mathematical Society, The Maxwell Foundation, Professor L E Fraenkel,
The London Mathematical Society and The Scottish International Education Trust.
The Scottish Mathematical Council is indebted to the above for their generous support and gratefully acknowledges financial and other assistance from schools, universities and education authorities.
Particular thanks are due to the Universities of Aberdeen, Edinburgh, Glasgow, St Andrews, Stirling, Strathclyde and to Bearsden Academy, Kelvinside Academy and Northfield Academy.

Primary Division: Problems III

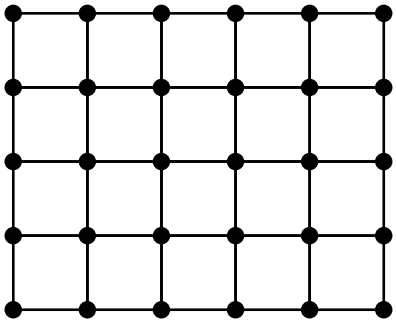
P3.1. Maureen, Alice and Siobhan are three young sisters, in that order of age. Alice is two years older than Siobhan.

Each year, their wealthy aunt gives each of them, for each year of her age, as many pounds as she is years old. For example, on her first birthday a girl would receive one pound and on her third birthday nine pounds. The aunt has promised to continue this family custom with each girl until her twelfth birthday.

This year Maureen received as much as Alice and Siobhan put together.

How much will Siobhan receive next year?

P3.2.



The diagram represents a rectangular net. The net is made from string knotted together at the points shown. The strings are cut a number of times; each cut severs precisely one section of string between two adjacent knots. What is the largest number of such cuts that can be made without splitting the net into two separate pieces?

P3.3. In a diving competition, five judges each award a whole-number score from 1 to 10 and an average mark is then calculated. However there are three different ways of measuring the average: mean, mode and median. After a particular set of scores were given, an argument arose as to which measure should be used, as this would lead to three different final marks being awarded: 7, 8 or 9. Work out all the different possible scores that could have been awarded. Which mark would match with each measure?

END OF PROBLEM SET III