

# The Scottish Mathematical Council

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## MATHEMATICAL CHALLENGE 2014–2015

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,*

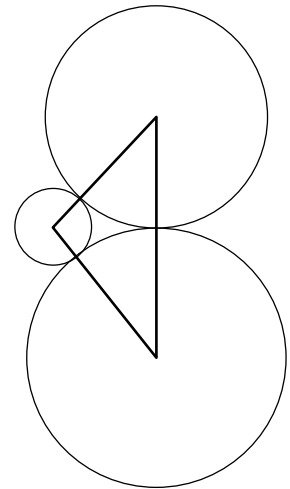
*The London Mathematical Society and The Scottish International Education Trust.*

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, Heriot Watt, St Andrews, Stirling, Strathclyde and to Bearsden Academy, Beaconsfield School and Northfield Academy.

### Primary Division: Problems III

- P3.1.** Dancers in a class are spaced evenly around a circle and are then counted off consecutively from number 1. Dancer 20 is directly opposite dancer 53. How many dancers are there in the group?
- P3.2.** In a singles tennis tournament there are 10 players. The organiser needs to arrange the 10 players into 5 pairs for the first round. In how many ways can this first round be drawn up?
- P3.3.** In the diagram (which is not drawn to scale) the lengths of the sides of the triangle are 8, 9 and 13 centimetres. The centres of the circles are at the vertices of the triangle, and the circles just touch. Find the radius of the largest circle.



**END OF PROBLEM SET III**