

# The Scottish Mathematical Council

www.scot-maths.co.uk

## MATHEMATICAL CHALLENGE 2021–2022

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,*

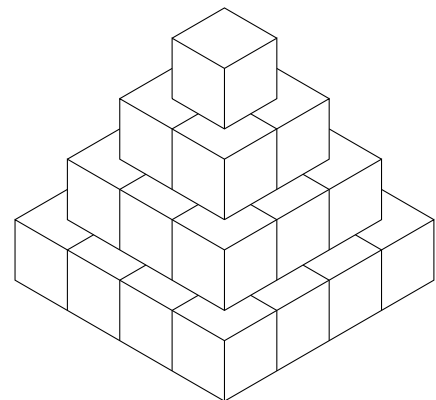
*The London Mathematical Society and The Scottish International Education Trust.*

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 George Heriot's School, Gryffe High School and Kelvinside Academy.

### Primary Division: Problems III

- P3.1.** Eight children divided 32 apples as follows: Ann got one apple, May two, Jane three and Kate four. Ned Smith took as many as his sister, Tom Brown took twice as many as his sister, Bill Jones three times as many as his sister and Jack Robinson four times as many as his sister. What are the full names of each of the four girls?
- P3.2.** Four nearby primary schools each have a basketball team – the Plodders, Ramblers, Galumphers and Wanderers. Their colours are purple, red, green and white and the captains are Parker, Richards, Grainger and Watson. In no case is the first letter of either colour or captain's name the same as that of the team. Similarly, in no case is the first letter of a captain's name the same as that of their colour. The Wanderers play in green. Grainger is the captain of the Plodders. The first letter of the colour in which Watson plays is the first letter of the name of the captain who plays in red. Who is the captain of the Wanderers?
- P3.3.** The diagram shows a pyramid made up of 25 cubes, each measuring 1 cm by 1 cm by 1 cm. The centre of the pyramid is a pyramid-shaped hollow, with each layer having edges one cube thick. What is the total surface area of the whole pyramid (including its hollow base)?



**END OF PROBLEM SET III**

CLOSING DATE FOR RECEIPT OF SOLUTIONS :

**11 February 2022**

Look on the SMC web site: [www.scot-maths.co.uk](http://www.scot-maths.co.uk) for information about Mathematical Challenge and for loads of practice items why not visit the MC archive?

[www.wpr3.co.uk/MC-archive/index](http://www.wpr3.co.uk/MC-archive/index)



# Mathematical Challenge Problems III

PRIMARY DIVISION

2021-2022

**PLEASE USE CAPITALS TO COMPLETE**

SURNAME

OTHER NAME(S)  
(underline the one  
you prefer)

SCHOOL

AGE

YEAR OF STUDY

FOR OFFICIAL USE

Marker

Marks

1	2	3	Total

— — — — - **CUT ALONG HERE** — — — —

Please write your solutions on A4 paper and staple the above form to them.

**PLEASE WRITE YOUR NAME ON EVERY PAGE.**

Send your entry through your school to the organiser of the section.

For further information on the competition, please see the School Materials which have been distributed to schools. A copy of these Materials can be obtained from

**<http://www.wpr3.co.uk/MC/materials/index.html>**

There are separate links for primary and secondary schools. This page also includes a list of authorities in each section and names and addresses of section organisers.

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