



The Scottish Mathematical Council

Golden Jubilee Year

www.scot-maths.co.uk

MATHEMATICAL CHALLENGE 2025–2026

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 Napier, Moray House, St Andrews, Stirling, Strathclyde and to George Heriot's School, Gryffe High School and Kelvinside Academy.

Junior Division: Problems 2

J1.

“How many guests are there, Ruth?” asked Maggie, who was busy in the kitchen when the guests arrived for afternoon tea.

“Well Mum” replied Ruth, who had her wits about her, “it's like this, I reckon. Half of them take no sugar, a quarter of them no milk, a third of them take milk and sugar, and two of them neither milk nor sugar.”

Use Ruth's rather cryptic reply to figure out how many guests there are.

J2. The aim in this game is to swap the noughts and crosses in the smallest number of moves. Noughts and Crosses take turns moving one piece. A move can be up, down, sideways or diagonally one square as long as that square is empty.

How can this be achieved in the smallest number of moves?

×	×	×	
○	○	○	

J3. A, B, C and D are all towns on the same road, in that order. Lily has decided to spend a long weekend visiting friends who live in B, C and D, staying overnight to catch up with each of them. B is 5 times as far from C as it is from A. C is halfway between A and D. Lily cycles from A to B at 8mph. She then gets a lift in her friend's car driving from B to C at 24 mph. Finally she takes the bus from C to D at 48 mph.

The whole travelling time was $5\frac{1}{2}$ hours. How far is it from A to B?

J4. Jessie drank 5 glasses of apple juice from a large container, and then added water to the container up to the original level of the apple juice. The next day she drank 6 glasses of liquid from the container, and observed that she had drunk the same amount of undiluted apple juice as on the first day. How many glasses of apple juice were there in the container at the start?

SEE OVER FOR QUESTION J5.



Mathematical Challenge Problems 2

JUNIOR DIVISION 2025-2026

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	4	5

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 section organiser.

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.

J5. The numbers 1 to 25 are arranged in a square in 5 rows and 5 columns as shown below:

1	2	3	4	5
10	9	8	7	6
11	12	13	14	15
20	19	18	17	16
21	22	23	24	25

Note that the numbers **snake back and forth** across the rows.

What is the smallest possible total that can be made by choosing 5 of these numbers such that no two numbers come from the same row and no two numbers come from the same column? Give an example of how to achieve this smallest possible total, and explain how you know that this is the smallest possible total.

END OF PROBLEM SET 2

CLOSING DATE FOR RECEIPT OF SOLUTIONS :

27 February 2026

For information about Mathematical Challenge, look on the MC web site: www.scot-maths.co.uk

There are archives of previous questions on: www.wpr3.co.uk/MC-archive/J/index-J.html