MATHEMATICAL CHALLENGE 2024–2025

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.

Primary Division: Problems III

P3.1. A group of children were playing a ring toss game. On their turn, each player tossed three rings at the three pegs, and every ring tossed landed on a peg. Sometimes there were two or three rings on the same peg. A ring over peg A is worth one point, over peg B three points and over peg C five points. Surprisingly, every child in the group had a different total score.
What is the largest possible number of children in the group?

P3.2. A triangle can be formed with sides of lengths 3, 4 and 6 cm but not with sides of lengths 3, 4 and 7 cm. Oliver has 8 sticks each with length a whole number of cm, but he cannot form a triangle with any 3 of them.
What is the shortest possible length of the longest stick?

P3.3. In a chemistry lab there are two bottles, each containing a mixture of acid and water:

        bottle A contains 140 grams of which 10% is acid,

        bottle B contains 60 grams of which 25% is acid.

The lab technician uses some of the mixture from each of the bottles to create a mixture with mass 120 grams of which 15% is acid. Then the lab technician mixes the remaining contents of the bottles to create a new mixture. What percentage of the new mixture is acid?

END OF PROBLEM SET III

CLOSING DATE FOR RECEIPT OF SOLUTIONS : | **7 February 2025**

Look on the SMC web site: www.scot-maths.co.uk for information about Mathematical Challenge.

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

Here is a shortcut for your smartphone or tablet

Mathematical Challenge Problems III

PRIMARY DIVISION

SMC

2024-2025

PLEASE USE CAPITALS TO COMPLETE

SURNAME

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

SCHOOL

AGE

YEAR OF STUDY P

— — — — - C U T A L O N G H E R E — — — —

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.