

The Scottish Mathematical Council

www.scot-maths.co.uk

MATHEMATICAL CHALLENGE 2020–2021

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.*

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Primary Division: Problems III

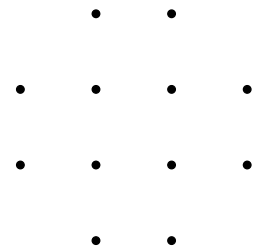
P3.1. Gavin, Alan and Jack all play an online football simulation game. In order to improve their teams, they purchase 21 packs of players, each pack containing six players. These players are split into two categories: Gold and Silver. Seven of the packs contain only Gold players, seven contain only Silver players, and the remaining seven packs each contain an even split of Gold and Silver players. The boys also decided that no individual should be allowed to have more than three packs of the same type.

How should they distribute the packs to ensure each person obtains the same number of Gold and Silver players?

Explain your reasoning.

P3.2. Twelve points are marked on a square grid, as shown. How many squares can be formed by joining four of these points?

Explain your reasoning.



P3.3. The product of the digits of the number 318 is 24. How many 3-digit numbers have digits with product 24?

END OF PROBLEM SET III