The Scottish Mathematical Council

www.scot-maths.co.uk

MATHEMATICAL CHALLENGE 2013−2014

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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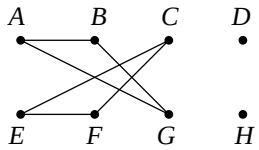
Primary Division: Problems III

P3.1. The date of the second Thursday of a particular month is a square number. What is the date of the last Wednesday of that month?
Explain your reasoning.

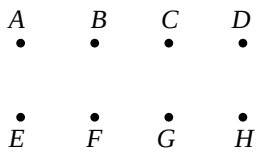
P3.2. One family outing last summer included an impromptu sports day with five events in which 4, 2 and 1 points were awarded for the first three places in each event. Douglas and John tied with 8 points each. Jackie came next with 7, and Bill and Colin each had 6.
Colin didn't win any event but gained points in three of them. He beat both Bill and Douglas in the 200 metres but was well behind John in the High Jump.
Jackie won the Long Jump, but was well out of the points in the High Jump.
Bill was the only child who gained points in every event, his best effort being in the 100 metres.
Who were the first three children in the 400 metres event and in what order did they finish?
Explain your reasoning.

P3.3. Triangles are called 'congruent' when they are identical. This means they are the same size and shape, although they can be in different positions. For example, triangles *ABG* and *EFC* are congruent.



Non-congruent triangles must be different is some respect.

How many **non-congruent** triangles can be formed by joining the dots on the grid below?



Explain your reasoning.

END OF PROBLEM SET III