The Scottish Mathematical Council

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MATHEMATICAL CHALLENGE 2016-2017

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. Alice put some 10p coins on the table. Half of them were tails up. Alice turned over two of the coins, and then one third of them were tails up.

How many coins did Alice put on the table?

P3.2. Colin and Tom are on a camping holiday and, at their campsite, they make friends with Fiona. They ask her when her birthday is but, being a bit of a joker, Fiona tells them only that it is one of the following dates.

May 14,	May 15,	May 18,	June 16,	June 19,
July 12,	July 15,	August 12,	August 14,	August 16.

She then tells Colin the month of her birthday, but not the day in the month, whilst she tells Tom the day in the month, but not the month.

Immediately, Colin declares “Well, Tom certainly cannot know for sure when Fiona's birthday is” to which Tom replies “Ah, but now I do.” “And now I know when it is as well,” comes back Colin.

When is Fiona's birthday? **Explain your reasoning.**

P3.3. The pages of George's book are numbered from 1. The page numbers have a total of 555 digits. How many pages does the book have?

END OF PROBLEM SET III