



The Scottish Mathematical Council

www.scot-maths.co.uk

MATHEMATICAL CHALLENGE 2009–2010

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, Professor L E Fraenkel,

The London Mathematical Society and The Scottish International Education Trust.

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Junior Division: Problems 2

- J1.** In Wuppertal Zoo, there is a tank containing 41 spectacular tiger fish. Each male fish has 111 stripes while each female has only 37 stripes. Unfortunately the male fish caught a disease and two thirds of them died. How many stripes were on display in the tank after this?
- J2.** A lion would take four hours to eat one sheep; a leopard would take five hours; and a bear would take six hours. Assuming that the lion, the leopard and the bear were friends, how long would they take to devour a single sheep?
- J3.** Corinne and Elspeth live in different houses in a street with 12 houses. Every day, Corinne receives more letters than anyone else in the street and Elspeth receives fewer letters than anyone else in the street. One day there were 56 letters delivered to the street. What is the smallest that the difference between the number of letters that Corinne received and the number that Elspeth received, can be?
- J4.** One evening a psychology lecturer invited some students to her house. She had a bowl of cherries which she had carefully counted so that there was the same number for each student. As she passed round the bowl of cherries, the first student took one more cherry than his share. The second student took one more cherry than the first student and the third student took one more cherry than the second student. At this point, with half the cherries eaten, the lecturer took the bowl and divided the remainder equally among the remaining students, each receiving one less cherry than she originally intended. How many cherries were there?
- J5.** How many squares, of *all* sizes, are seen on a standard, 9×9 Sudoku grid?

END OF PROBLEM SET 2