



# The Scottish Mathematical Council

## 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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### Primary Division: Problems III

**P3.1.** I have some coins in my pocket. Using the three clues below, work out how many coins I have.

- If the number of coins I have is not a multiple of 10, then it is a number between 30 and 39.
- If the number of coins I have is a multiple of 5, it is a number between 1 and 19
- If the number of coins I have is not a multiple of 8, then it is a number between 20 and 29

**You must give a full explanation of your solution.**

**P3.2.** In a game of three-dimensional noughts and crosses how many possible winning lines can there be?

**P3.3.** 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?

**END OF PROBLEM SET III**