The Scottish Mathematical Council

www.scot-maths.co.uk

MATHEMATICAL CHALLENGE 2012–2013

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,

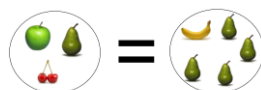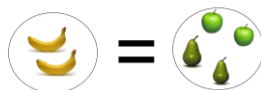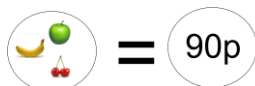***The London Mathematical Society and The Scottish International Education Trust.***

Primary Division: Problems I

P1.1. There is a drawer in Katie's house which contains twelve ribbons – four red, four white and four blue. Her mother sent her into the room for two ribbons of the same colour, but it didn't matter which colour. However, it was very dark and there were no candles, torches or any other source of light.

How many ribbons would Katie have to bring out to make sure that she had two ribbons of the same colour?

P1.2.

A mathematical greengrocer had the display shown alongside in his shop window. The poster shows how the costs of one apple, one banana, one pear and a pair of cherries are related.

How much does each kind of fruit cost?

Explain your reasoning.

P1.3. Alice, Bill, Colin, Daisy and Edward play a game in which each is a frog or a toad. A frog's statements are always false and a toad's statements are always true.

A	Alice says that Bill is a toad.	B	Colin says that Daisy is a frog.
C	Edward says that Alice is not a frog.	D	Bill says that Colin is not a toad.
E	Daisy says that Edward and Alice are different kinds of animals.		

Who of Alice, Bill, Colin, Daisy and Edward are the frogs?

END OF PROBLEM SET I