

The Scottish Mathematical Council

MATHEMATICAL CHALLENGE 2008–2009

Entries must be the unaided efforts of individual pupils. Solutions must include explanations.

Answers without explanation will be given no credit.

CURRENT AND RECENT SPONSORS OF MATHEMATICAL CHALLENGE ARE

The Edinburgh Mathematical Society, Professor L E Fraenkel,

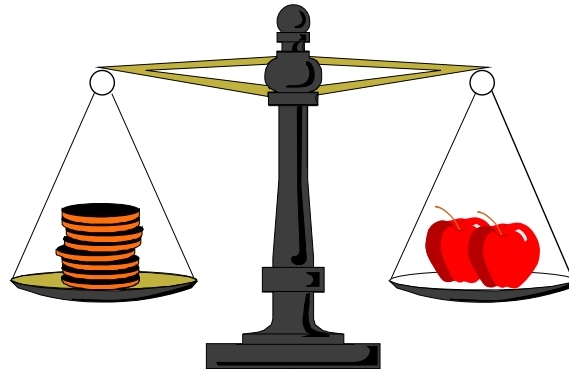
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Primary Division: Problems II

P2.1.



The local greengrocer has a set of balance scales for weighing fruit and vegetables. Over the years, some of his weights have been lost until now only some 2kg, 3kg and 5 kg weights remain which have a total weight of 14 kg. Using these weights, the greengrocer maintains he can weigh any number of whole kilograms up to 14kg other than 1kg. Is he correct?

P2.2. Recently, instead of watching grass growing, I watched a convoy of 10 identical snails cross a small path and measured the length of time the whole process took. This was precisely 50 minutes and was the time from when the first snail slithered onto the path until the last snail left the path. The snails travelled nose-to-tail in single file and the path could only accommodate 8 snails at any one time. The snails travelled at the same speed and each snail was on the path for the same length of time. For how long was each snail on the path, from the time it first made contact with the path until the instant its tail left the path?

P2.3. “How old are you, Jack?” asked his friend. “I am three times my son’s age and my father is 4 years more than twice my age. Together, the three of our ages add to 124 years.” How old is Jack?

END OF PROBLEM SET II