The Scottish Mathematical Council

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MATHEMATICAL CHALLENGE 2013–2014

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.

Primary Division: Problems II

P2.1. Three friends went out to the park for a picnic. Amy brought 3 sandwiches and Rory brought 5. Cathy, who had forgotten to bring any, offered 80p for an equal share. They cut up the sandwiches and shared them equally between the three of them.

Afterwards, Amy suggested splitting the 80p into 30p for herself and 50p for Rory since she had brought 3 and Rory had brought 5. Was this fair? Explain your reasoning.

P2.2.
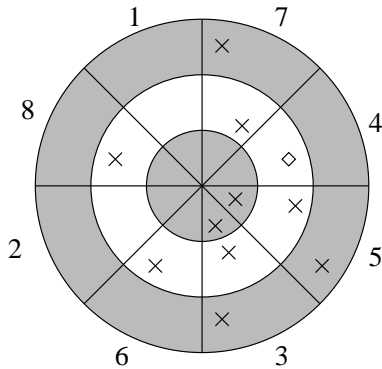
A target, like the one shown, is used by the local archery club for all kinds of competitions. The outer ring scores the number shown, the white ring doubles the outside number and the smallest ring trebles the number. For example, an arrow landing in the diamond would score $2 \times 4 = 8$.

A few nights ago Doreen, Edward, Fred, Gina and Helen set themselves this task:
Each person was to have two arrows.
With the first one, a 'double' had to be scored.
The second arrow had to score less than the first.
The total of the scores for the two arrows had to be a prime number.

All the competitors were successful and the crosses in the drawing above show where the arrows landed.
Two of the competitors had the same total. Apart from that, their totals were in 'alphabetical' order, with Doreen having the highest total. What was Gina's total score?

P2.3. Each of the three girls, Fiona, Susan and Linda, has two jobs. One of the six jobs is a journalist. Using the information below find out who has which jobs.

- The dancer danced with the hairdresser's boyfriend.
- Fiona played squash with Susan and the model.
- Susan borrowed some money from the violinist.
- The model bought some flowers from the florist.
- The dancer was fond of the model's brother.
- Both the hairdresser and the violinist like to go to concerts with Linda.

END OF PROBLEM SET II