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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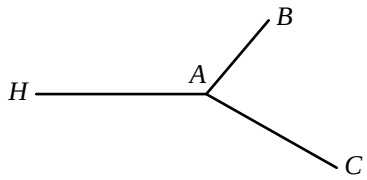
Primary Division: Problems I

P1.1. From his home *H*, a travelling salesman has to make 12 deliveries, 4 to each of the towns *A*, *B* and *C* as shown on the diagram.



For his travel he gets a mileage allowance of 50p per mile. He claims for 4 return journeys from home to each of the towns *A*, *B* and *C*. But he actually made the deliveries on a total of 4 trips, each trip going from *H* to *A* to *B* to *A* to *C* to *A* and back to *H*. If, by his dishonest claim, he made an additional £160, how far is it from *H* to *A*?

P1.2. Four old-timers, John, Willie, Andy and Greig, take their wives to a tea-dance. At one point during the dance, the partners were as follows:

Flo is dancing with Willie.
Hettie is dancing with Beeb's husband
Mary is dancing with Hettie's husband.
Andy is dancing with Greig's wife.
Greig is dancing with Willie's wife.

Identify the married couples.

P1.3. Two knights, Sir Anthony and Sir Stephen, each have a very small army. The total number in the two armies is fifty men. The number of mounted troops in Sir Stephen's army equals the number of foot soldiers in Sir Anthony's army. Sir Anthony has two fewer troops in total than Sir Stephen and the number of mounted troops in Sir Anthony's army is four fewer than the number of mounted troops in Sir Stephen's army. How many mounted troops and foot soldiers does each army have?

END OF PROBLEM SET I