4 Given that $x > 0$ and that

$$\begin{pmatrix} -1 & 2 \\ -3 & -4 \\ 5 & -6 \end{pmatrix} \begin{pmatrix} 7 & -1 & xz \\ x^2 & x + 2y & -y \end{pmatrix} = \begin{pmatrix} 1 & 1 & -4 \\ -37 & 3 & -22 \\ 11 & -5 & 24 \end{pmatrix}$$

find the value of x, the value of y and the value of z.

(Total for Question 4 is 6 marks)

5 150 tourists in London took part in a survey to see how popular three tourist attractions are.

Each tourist was asked to say whether they had visited *Buckingham Palace* (*B*), *Hampton Court* (*H*) or the *Tower of London* (*T*).

25 of the 150 tourists had not visited any of the three tourist attractions.

Of the other tourists who were asked

     20 had visited all three attractions

     25 had visited *Buckingham Palace* and *Hampton Court*

     35 had visited *Hampton Court* and the *Tower of London*
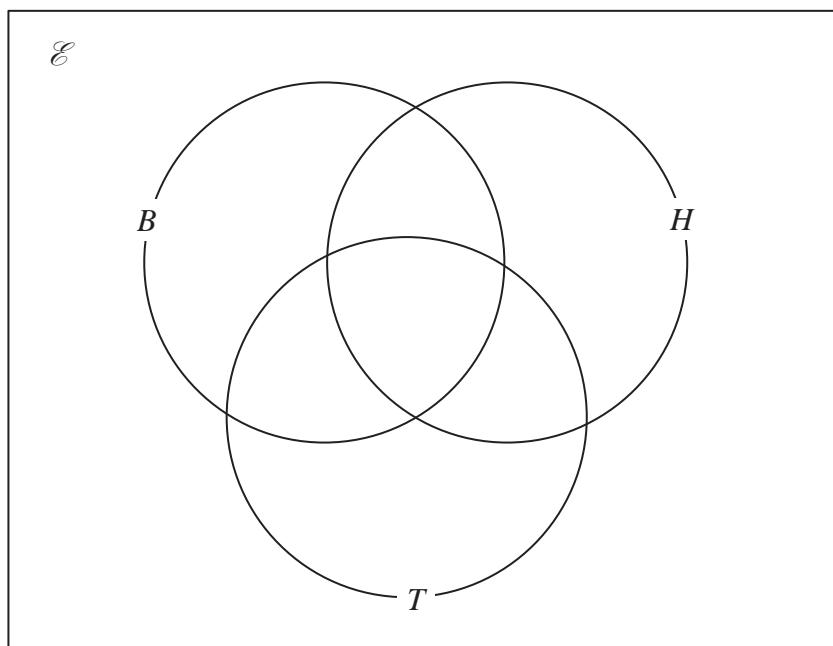
     30 had visited *Buckingham Palace* and the *Tower of London*

     45 had visited *Buckingham Palace* only

     x had visited *Hampton Court* only

The results of the survey also showed that the number of visitors who had visited the *Tower of London* only was 4 times the number of visitors who had visited *Hampton Court* only.

(a) Show all this information on the Venn diagram.

(4)

(b) Use the information in the Venn diagram to write down an equation in *x*.

(1)

(c) Hence find the value of *x*.

(2)

One of the tourists who took part in the survey was picked at random.

Given that this tourist had visited *Buckingham Palace*,

(d) write down the probability that this tourist had visited the *Tower of London*.

(1)

Turn over for a spare Venn diagram if you need to redraw your diagram.

Question 5 continued

P 5 3 3 0 9 A 0 7 3 2

Question 5 continued
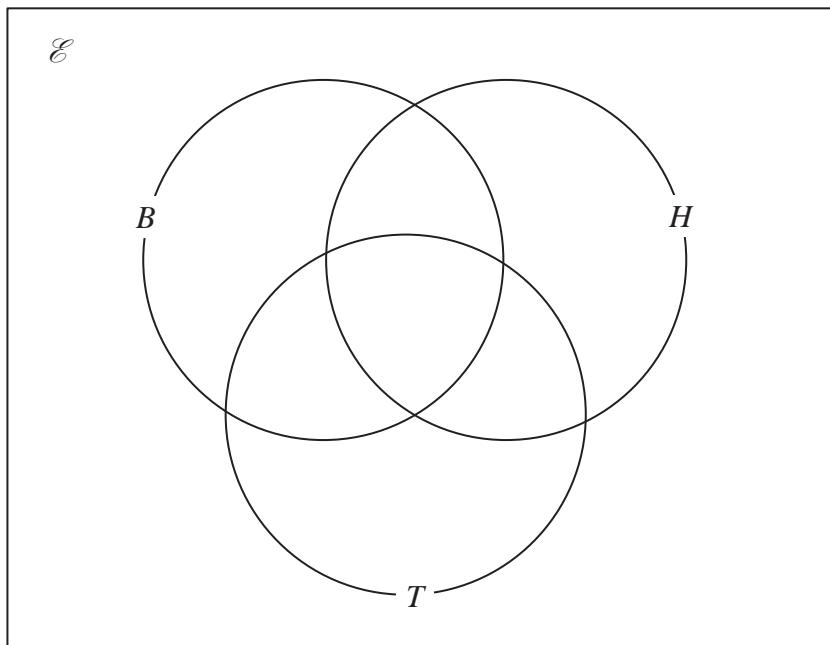
Question 5 continued

Only use this diagram if you need to redraw your Venn diagram.

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(Total for Question 5 is 8 marks)