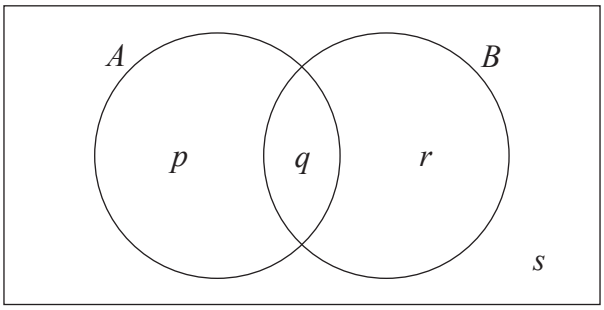
4. (i) In the Venn diagram below, A and B represent events and p, q, r and s are probabilities.



$$P(A) = \frac{7}{25} \qquad P(B) = \frac{1}{5} \qquad P\left[\left(A \cap B'\right) \cup \left(A' \cap B\right)\right] = \frac{8}{25}$$

(a) Use algebra to show that $2p + 2q + 2r = \frac{4}{5}$

(4)

(b) Find the value of p, the value of q, the value of r and the value of s

(5)

(ii) Two events, C and D, are such that

$$P(C) = \frac{x}{x+5} \qquad P(D) = \frac{5}{x}$$

where x is a positive constant.

By considering $P(C) + P(D)$ show that C and D **cannot** be mutually exclusive.

(4)

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Question 4 continued

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Question 4 continued

(Total for Question 4 is 13 marks)

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