4 A youth club has introduced three new activities

badminton (B), cookery (C) and drama (D).

Each of the 75 members of the youth club is asked to say in which of these activities they have participated.

Their answers showed that of the 75 members

all have participated in at least one of these activities

27 have participated in badminton and drama

31 have participated in badminton and cookery

23 have participated in cookery and drama

48 have participated in badminton

49 have participated in cookery

40 have participated in drama.

Let x be the number of members of the youth club who have participated in all three activities.

(a) Using all this information, complete the Venn diagram opposite to show, in terms of x, the number of elements in each appropriate subset.

(3)

(b) Find the value of x.

(2)

(c) Find

(i) $\mathrm{n}(B \cap C')$

(ii) $\mathrm{n}\left(\left[(B \cup C) \cap D\right]'\right)$

(2)

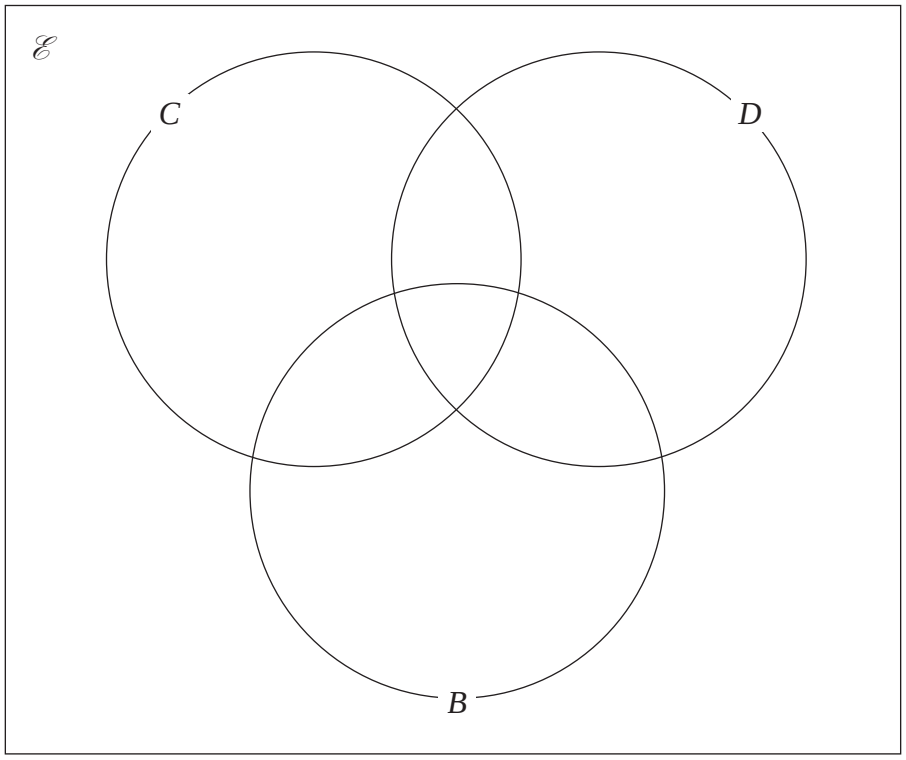
One of the members of the youth club is picked at random.

Given that this member has participated in cooking,

(d) find the probability that this member has not participated in any other activity.

(2)

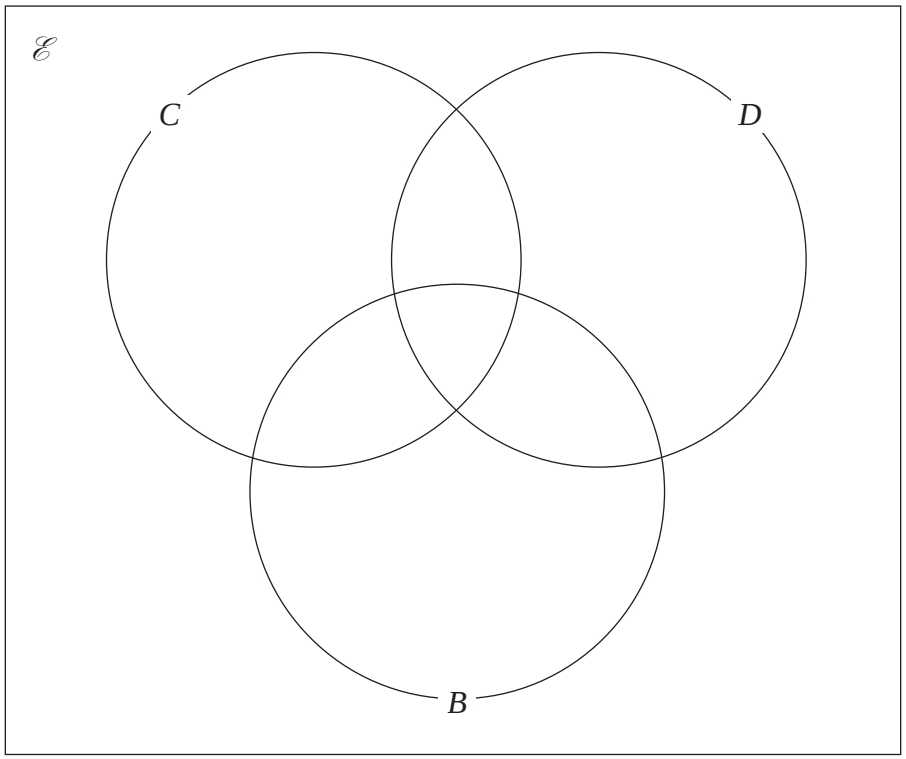
Question 4 continued



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

Question 4 continued

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



(Total for Question 4 is 9 marks)