

# Cambridge International AS & A Level

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Mathematics

9709/52

Paper 5 Probability & Statistics 1      October/November 2021

## Question No (2)

2 A group of 6 people is to be chosen from 4 men and 11 women.

(a) In how many different ways can a group of 6 be chosen if it must contain exactly 1 man?

Two of the 11 women are sisters Jane and Kate.

(b) In how many different ways can a group of 6 be chosen if Jane and Kate cannot both be in the group?

**Solution:**

(a)

$$C_1^4 \times C_5^{11}$$

$$= 1848$$

$\therefore C_1^4$  mean one man

and  $C_5^{11}$ , 5 women from 11 women

(b)

Number of men 4

Number of women 11

Total Number of people,  $4 + 11 = 15$

Total number solution for 6 people =  $C_6^{15}$

$$= 5005$$

Number of Solution when both Jane and kate picked =  $C_4^{13}$   
 = 715 (Same and Kate both pick, we shall take 4 others people from 13)

Number of solutions when both Jane and Kate are not picked =  $C_6^{15} - C_4^{13}$

$$= 5005 - 715$$

$$= 4290$$