

Permutation and Combination – 2022 AS June

1. March/2022/Paper_9709/52/No.5

A group of 12 people consists of 3 boys, 4 girls and 5 adults.

- (a) In how many ways can a team of 5 people be chosen from the group if exactly one adult is included? [2]

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- (b) In how many ways can a team of 5 people be chosen from the group if the team includes at least 2 boys and at least 1 girl? [4]

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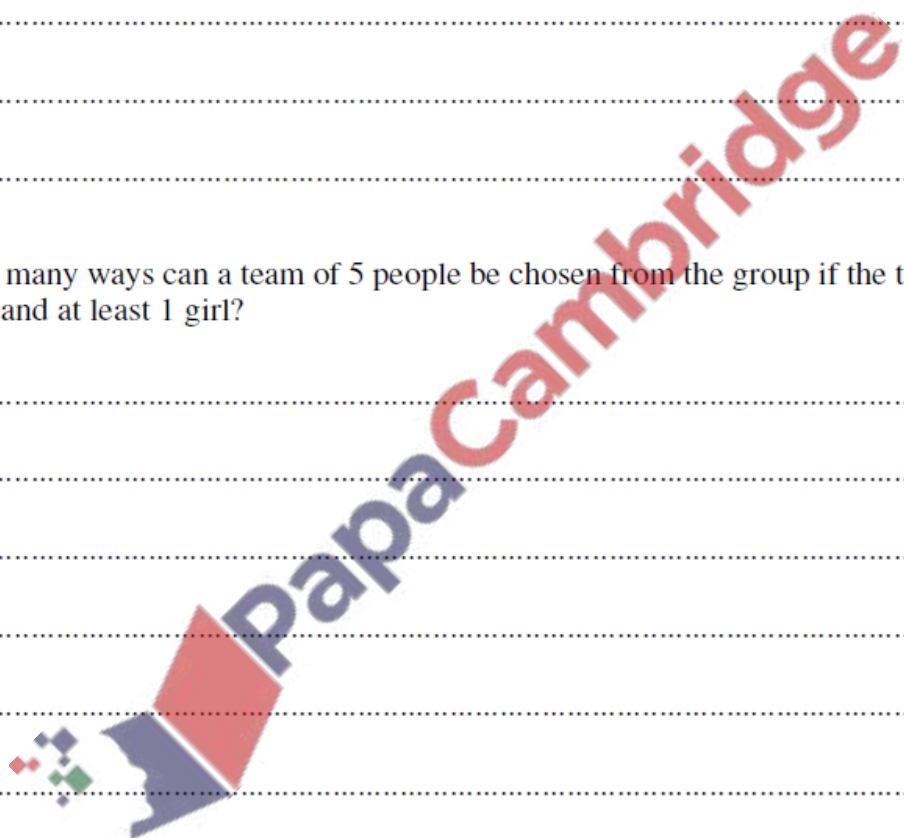
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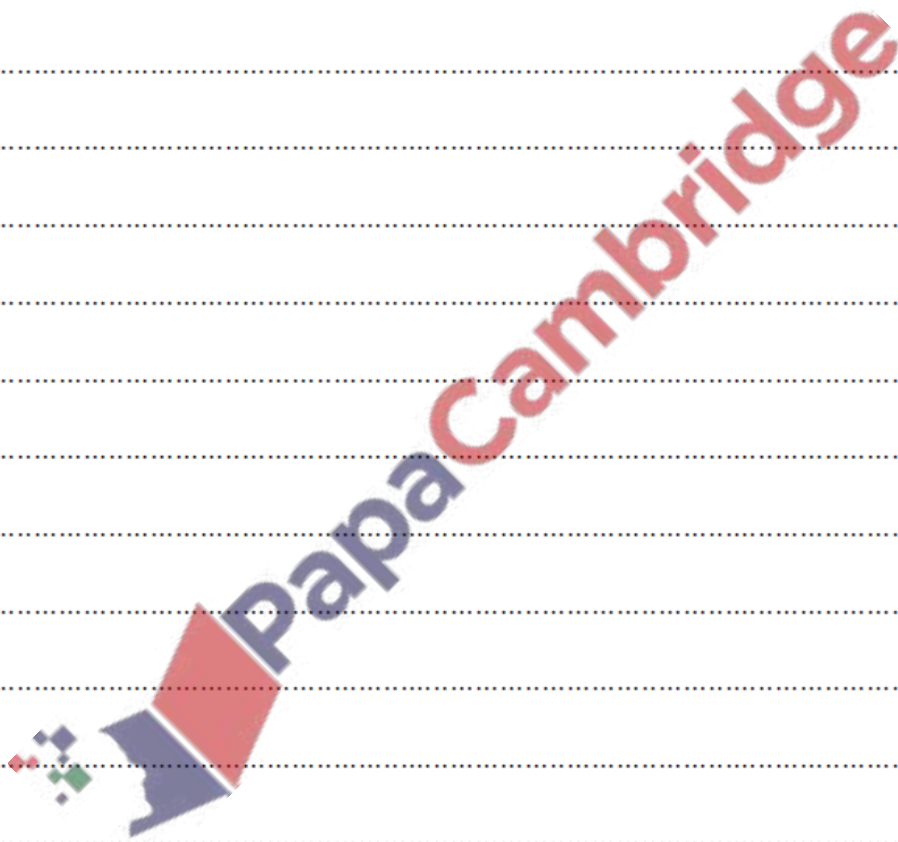
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The same group of 12 people stand in a line.

- (c) How many different arrangements are there in which the 3 boys stand together and an adult is at each end of the line? [4]



- (a) Find the number of different arrangements of the 8 letters in the word DECEIVED in which all three Es are together and the two Ds are together. [2]

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- (b) Find the number of different arrangements of the 8 letters in the word DECEIVED in which the three Es are not all together. [4]

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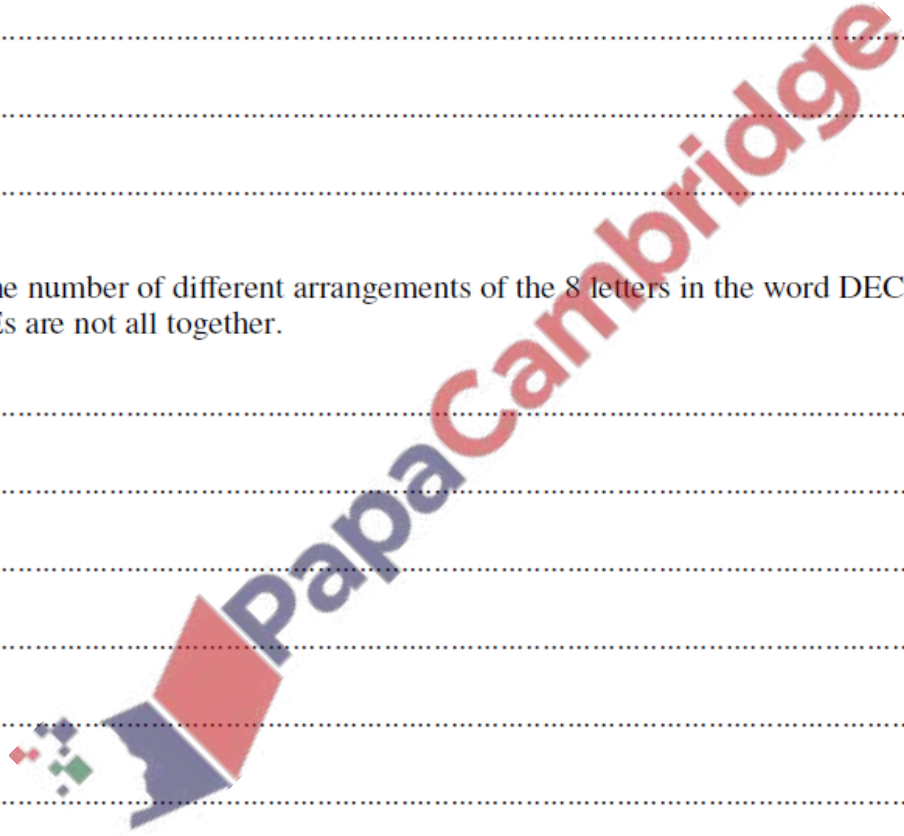
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3. June/2022/Paper_9709/51/No.2

There are 6 men and 8 women in a Book Club. The committee of the club consists of five of its members. Mr Lan and Mrs Lan are members of the club.

- (a) In how many different ways can the committee be selected if exactly one of Mr Lan and Mrs Lan must be on the committee? [2]

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- (b) In how many different ways can the committee be selected if Mrs Lan must be on the committee and there must be more women than men on the committee? [4]

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(a) Find the number of different arrangements of the 9 letters in the word CROCODILE. [1]

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(b) Find the number of different arrangements of the 9 letters in the word CROCODILE in which there is a C at each end and the two Os are not together. [3]

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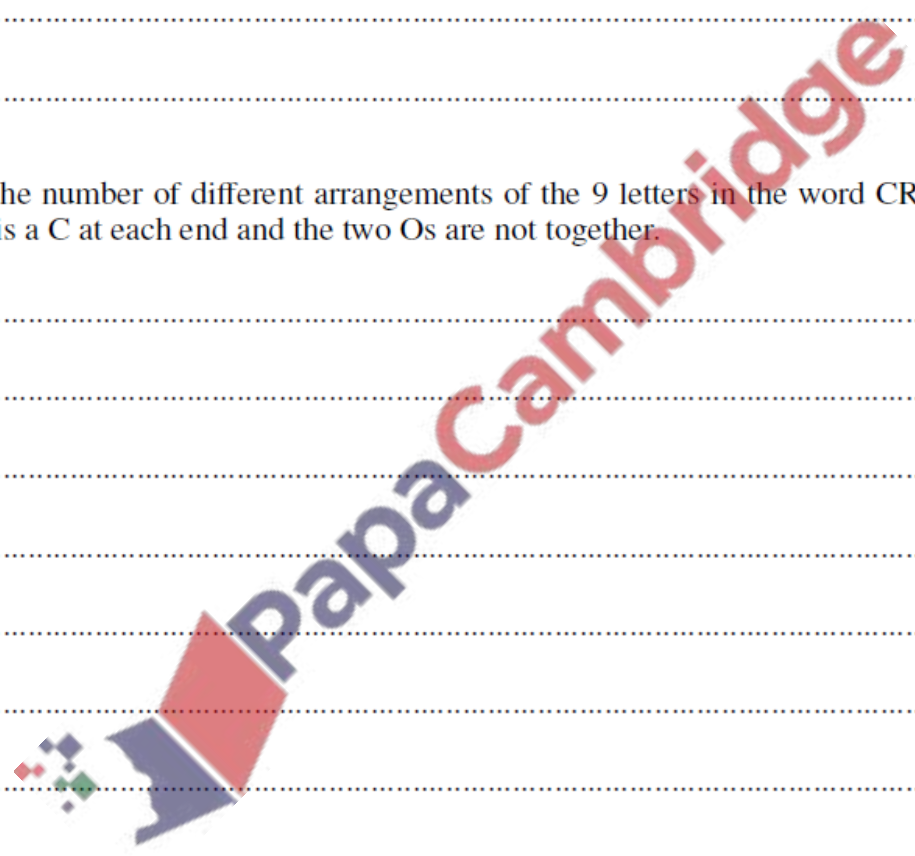
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- (c) Four letters are selected from the 9 letters in the word CROCODILE.

Find the number of selections in which the number of Cs is not the same as the number of Os.

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- (d) Find the number of ways in which the 9 letters in the word CROCODILE can be divided into three groups, each containing three letters, if the two Cs must be in different groups. [3]

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5. June/2022/Paper_9709/53/No.7

A group of 15 friends visit an adventure park. The group consists of four families.

- Mr and Mrs Kenny and their four children
- Mr and Mrs Lizo and their three children
- Mrs Martin and her child
- Mr and Mrs Nantes

The group travel to the park in three cars, one containing 6 people, one containing 5 people and one containing 4 people. The cars are driven by Mr Lizo, Mrs Martin and Mr Nantes respectively.

- (a) In how many different ways can the remaining 12 members of the group be divided between the three cars? [3]

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The group enter the park by walking through a gate one at a time.

- (b) In how many different orders can the 15 friends go through the gate if Mr Lizo goes first and each family stays together? [3]

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In the park, the group enter a competition which requires a team of 4 adults and 3 children.

- (c) In how many ways can the team be chosen from the group of 15 so that the 3 children are all from different families? [2]

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- (d) In how many ways can the team be chosen so that at least one of Mr Kenny or Mr Lizo is included? [3]

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