Math Academy: P & C and Probability Test
Name:

1. Three men, three women and a married couple are randomly seated at a round table with eight seats. Find the probability that

    (a) the married couple is seated together, [3]

    (b) no two women are seated next to each other given that the married couple is seated together, [3]

    giving each of your answers as a fraction in its lowest terms.

    State, with a reason, whether or not the events 'no two women are seated next to each other' and 'the couple is seated together' are independent. [2]

2. A committee consisting of six people is to be selected from five women and six men. Three of the women are sisters. Find the number of ways the committee can be formed if

    (a) i. the chosen committee will contain exactly two men, [1]

    ii. at least one of the sisters are included. [2]

    (b) The chosen committee consists of two particular sisters together with 3 other men and one other woman. They are seated at a round table meant for six persons. Find the number of possible arrangements if

    i. one of the men is to be seated between the two sisters, [2]

    ii. the two sisters are sitting directly opposite each other. [2]

3. (a) Find the number of ways of arranging the word PRELIMINARY if the first and last letter is a vowel. [4]

    (b) A group of 10 students comprising of 3 males and 7 females attended their graduation dinner. Find the number of ways of seating them at a round table with 10 chairs of different colors and no two male students are seated next to each other. [3]

4. Seven men and seven women, including Sally and Andy, participated in a speed dating session at a community centre.

    All participants are to sit in a way such that no two persons of the same gender sit next to each other.

    How many ways can the participants be arranged if

    i. they are seated at a round table of 14 seats, [2]

    ii. they are seated at 2 similar round tables of 6 seats each without Sally and Andy, [3]