

Q.1 In how many different ways, can 8 people be seated in a row, if

- a) There is no restriction on seating? $8!$
- b) persons A, B must sit next to each other? $7! \times 2!$
- c) There are 4 men and 4 women, and no 2 men or 2 women can sit next to each other? $[4! \times 4!] \times 2$
- d) There are 4 married couples, and each couple must sit together? $[2! \times 2! \times 2! \times 2!] \times 4!$

2) How many different letter arrangement can be made from the letters of word: MAMMAL?

3. 2. From a group of 9 women and 7 men a committee consisting of 4 women and 3 men is to be formed. How many different committees are possible if
- (a) 2 of the men refuse to serve together;
 - (b) 1 man and 1 woman refuse to serve together?

4) After one-pair, the next most common hands are two-pair and three-of-a-kind:

Two-pair: Two cards have one rank, two cards have another rank, and the remaining card has a third rank. e.g. {2♥, 2♠, 5♥, 5♣, K♦}

Three-of-a-kind: Three cards have one rank and the remaining two cards have two other ranks. e.g. {2♥, 2♠, 2♣, 5♣, K♦}

Calculate number of all possible ways for each type of hand. Which is more likely?

5) How many arrangements of RECURRENCE RELATION (ignoring the space)

a) Have no two vowels adjacent?

b) Have the vowels in alphabetical order?

6) How many arrangements of NASHVILLE TENNESSEE (ignoring the space) have the first N preceding the first S and the first E preceding the first T?