MH1812 Tutorial
Chapter 5: Combinatorics

Q1: A set menu proposes 2 choices of starters, 3 choices of main dishes, and 2 choices of desserts. How many possible set menus are available?

Q2: (a) In a race with 30 runners where 8 trophies will be given to the top 8 runners (the trophies are distinct, there is a specific trophy for each place), in how many ways can this be done?

(b) In how many ways can you solve the above problem if a certain person, say Jackson, must be one of the top 3 winners?

Q3: A shelf contains 5 Western books and 4 Romances. In how many ways can they be arranged

(a) without any restrictions?
(b) if all the Western are together and all the Romances are together?
(c) if all the Western are together?
(d) if no two Western are together?

Q4: At a party there are 15 men and 20 women.

(a) How many ways are there to form 15 couples consisting of one man and one woman?
(b) How many ways are there to form 10 couples consisting of one man and one woman?

Q5: How many ternary strings of length 4 have zero ones?

Q6: How many distinguishable arrangements of the 10 letters of the word STATISTICS are possible?

Q7: (Continuation of Q6) Three letters are selected from these ten and the number of distinguishable ways of arranging them is calculated. What is the total number of distinguishable arrangements for all possible such selections?