CISC-102 FALL 2017

HOMEWORK 8

Please work on these problems and be prepared to share your solutions with classmates in class next week. Assignments will not be collected for grading.

READINGS

Read sections 5.3, 5.4, 5.5 5.6 and 5.7 of Schaum’s Outline of Discrete Mathematics.
Read section 3.1 and 3.2 of Discrete Mathematics Elementary and Beyond.

PROBLEMS

(1) What is the number of ways to colour $n$ identical objects with 3 colours? What is the number of ways to colour $n$ identical objects with 3 colours so that each colour is used at least once?
(2) How many different strings can you make using the letters TIMBITS?
(3) How many 5 card hands are there (unordered selection from a standard 52 card deck) that consist of a single pair of the same value, and three other cards of different values? Two possible examples are:

$2\heartsuit, 2\diamondsuit, 7\clubsuit, 9\spadesuit$ and $A\heartsuit, A\spadesuit, 4\diamondsuit, 6\diamondsuit, 3\heartsuit$

(4) From 100 used cars sitting on a lot, 20 are to be selected for a test designed to check safety requirements. These 20 cars will be returned to the lot, and again 20 will be selected for testing for emission standards.

(a) In how many ways can the cars be selected for safety requirement testing?
(b) In how many ways can the cars be selected for emission standards testing?
(c) In how many different ways can the cars be selected for both tests?
(d) In how many ways can the cars be selected for both tests if exactly 5 cars must be tested for safety and emission?