MATH 112 Discrete Mathematics.
Suggested Exercise set II

1. Find the number of permutations of a, b, c, $\ldots x$, y, z in which none of the patterns *spin*, *game*, *path* or *net* occurs.

Problem 2. Determine the number of positive integers x where $x < 9\,999\,999$ and the sum of digits in x equals 31.

Problem 3. In how many ways can Troy select nine marbles from a bag of twelve (identical except for color), where three are red, three blue , three white and three green?

Problem 4. In how many ways can one distribute ten distinct prizes among four students with exactly two students getting nothing? How many ways have at least two students getting nothing?

Problem 5. If 13 cards are dealt from a standard deck of 52, what is the probability that these 13 cards include
(a) at least one card from each suit?
(b) exactly one void (for example no clubs)?
(c) exactly two void?

Problem 6. Ms. Pezzulo teaches geometry and then biology to a class of 12 advanced students in a classroom that has only 12 desks. In how many ways can she assign the students to these desks so that
(a) no student is seated at the same desk for both classes?
(b) there are exactly six students each of whom occupies the same desk for both classes?

Problem 7. It is known that at the university 60 percent of the professors play tennis, 50 percent of them play chess, 70 percent jog, 20 percent play tennis and chess, 30 percent play tennis and jog and 40 percent play chess and jog. if someone claims that 20 percent of the professors jog and play chess and tennis, would you believe this claim? (Explain).

Problem 8. Among 50 students in class, 26 got an A in Calculus and 21 got an A in Algebra. If 17 students did not get an A in either Calculus or Algebra, how many students got an A in both examinations?