MAD 3105 DM2 **Alternate Plan B** **Name:** _____

Show **ALL** work for credit; be neat;

3. & 4. How many 13 card bride hands are there?

A. With 5 spades, 3 diamonds, 4 hearts and 1 club?

B. With 3 four of a kinds?

C. With 4 of one suit and 3 of each of the other suits?

D. With at least one spade?

E. With exactly two suits?

5. & 6. How many ways are there of giving 20 books into 6 children,

A. If the books are identical?

B. If the books are identical and each child gets at least 2 books?

C. If the books are distinct?

D. If the books are distinct and each child gets 3 or 4 books?

E. If the books are distinct and each child gets at least 3 books?

8. Use Inclusion-Exclusion for part A&B. [*Hint* : define the sets A_i so as to count the intersection of the complements of A_i.]

A&B. Being a small state Rhode Island decides to use only the digits 1, 2, 3, 4, and 5 on its license plates. (They felt the zero too embarrassing and the larger numbers just got laughed at.) However, being a populous state, they then required 9 digits on each license plate. Count the number of Rhode Island license plates which have at least one of each of the numbers 1-5.

C. Compute the probability that the above event occurs.