A Problems (Required)	B Problems (For additional practice)
1. How many even 3-digit positive integers can be written using the digits 0, 1, 3, 4, 5, and 6?	1. How many even 4-digit positive integers can be written using the digits 0, 1, 3, 4, 5, and 6?
2. In how many different ways can a 8-question true-false exam be answered: a) if every question must be answered? b) if it is all right to leave questions unanswered?	2. In how many different ways can a 6-question true-false exam be answered: a) if every question must be answered? b) if it is all right to leave questions unanswered?
3. In how many ways can you select 4 cards, one after the other, from a 52-card deck: a) if the cards are returned to the deck after being selected? b) if the cards are not returned to the deck after being selected?	3. In how many ways can you select 3 cards, one after the other, from a 52-card deck: a) if the cards are returned to the deck after being selected? b) if the cards are not returned to the deck after being selected?
4. How many 3-digit numbers contain no 7's?	4. How many 4-digit numbers contain no 8's or 9's?
5. a) How many 3-number locker combinations are possible if the numbers on the lock's dial range from 0 to 20? b) How many combinations are possible from part a) if all three numbers must be different?	5. a) How many 3-number locker combinations are possible if the numbers on the lock's dial range from 0 to 30? b) How many combinations are possible from part a) if all three numbers must be different?
6. How many license plates of three symbols (letters and digits) can be made using at least 2 letters each?	6. How many license plates of 4 symbols (letters and digits) can be made using at least 3 letters each?
7. In how many ways can 11 books be arranged on a shelf: a) using all the books? b) using 4 of the books?	7. Eight sprinters qualified for the finals in the state track meet. a) In how many ways can the runners finish the race? b) In how many ways can they finish first, second, and third?
8. In how many ways can the letters of the word MONDAY be arranged using a) all six letters? b) 3 letters at a time?	8. In how many ways can the letters of the word TUESDAY be arranged using a) all seven letters? b) using 3 letters at a time?
9. Find the number of ways the letters of each word can be arranged: a) ADDEND b) BEEKEEPER c) BASKETBALL	9. Find the number of ways the letters of each word can be arranged: a) ROTOR b) MISSISSIPPI c) HONOLULU
10. Simplify: a) $\dfrac{n!}{(n-3)!}$ b) $\dfrac{90!}{87!}$	10. a) $\dfrac{n!}{(n-2)!}$ b) $\dfrac{80!}{77!}$
11. Eight people are boarding an aircraft. Two have tickets for first class and board before those in the economy class. In how many ways can they board the aircraft?	11. Six friends are in a car. How many seating arrangements are possible if only two can drive?
12. Simplify: a) $_nP_{n-3}$ b) $_nP_2$	12. Simplify: a) $_{n+2}P_n$ b) $_nP_3$
Mixed Practice -- No B Problems -- All are required.	
13. Three couples go to the movies and sit together in a row of 6 seats. In how many ways can these people arrange themselves if each couple sits together?	
14. Given the set of letters {a, e, i, o, u}. a) How many arrangements are possible? b) How many arrangements are possible if e and u are next to each other? c) How many arrangements are possible if e and u are NOT next to each other?	
15. How many different 6-character license plates can be made with the first three characters as letters and the last three as digits a) with repeats b) without repeats	