

You MUST use good notation and show appropriate work.

Math 102
(Section 12.3/ FI)

Name _____

1. How many different ordered arrangements can be formed on a shelf with space for 3 books if there are 6 different books available? (Think permutations).

2. Is how many ways can we select a committee of 4 from a group of 10 people?

3. In how many ways can we form a committee of 3 democrats and 2 republicans choosing from a group of 7 democrats and 6 republicans?

4. In how many ways can a women's softball coach assign 9 positions to 9 players, if only 3 are able to pitch and only 2 (neither can pitch) are able to catch, while all can play any of the 7 other positions?

5. In how many ways can a little league coach make out a batting order consisting of 9 players if there are 12 players on the team?

6. Four traveler's arrive (independently and one at a time) in a town having 5 hotels.
 - a) In how many different ways can they make hotel selections?

 - b) In how many different ways can they make hotel selections if each traveler stays at a different hotel?

7. Using 9 different books including just 2 books of poetry, how many groups of 5 books can be formed, if each group must include exactly one book of poetry?

8. In a league of 10 colleges, how many basketball games will be played, if each college plays twice against each other college? (Hint: think of a smaller league).
- _____
9. How many different 3-digit numbers can be formed using the digits 0, 2, 4, 6, 8, if zero cannot be used as the first digit? (Note: the number 444 meets these requirements).
- _____
10. An ice cream parlor has 15 different flavors. George orders a 3-scoop sundae. How many different selections are possible if all 3 scoops are different flavors?
- _____
11. a. A poker hand consists of 5 cards taken at random from a standard deck of 52 cards. How many possible poker hands are there?
- _____
- b. How many 5 card hands have exactly 3 spades?
- _____
12. A slot machine's first wheel has 3 cherries, 5 oranges, 2 bars, 4 bells, and 6 pears. Its second wheel has 5 cherries, 7 oranges, 4 bars, 1 bell, and 3 pears. Its third wheel has 1 cherry, 6 oranges, 2 bars, 3 bells, and 8 pears.
- a) How many different ways can the wheels of the slot machine come to rest?
- b) How many ways are there to get three cherries?
- c) How many ways are there to get three oranges?
- d) How many ways are there to get three bars?
- e) How many ways are there to get three bells?
- f) How many ways are there to get three pears?
- g) Payouts occur whenever the gambler gets three of a kind. Which result should give the highest payout?