

You MUST use good notation and show appropriate work.

Math 102
(Sections 13.3 & 13.4)

Name _____

1. How many different ordered arrangements can be formed on a shelf with space for 4 books if there are 7 different books available? (Think permutations).

2. Is how many ways can we select a committee of 5 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 8 democrats and 5 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 is to 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 hands have exactly 3 spades?

12. A slot machine's first wheel has 3 cherries, 6 oranges, 1 bar, 4 bells, and 6 pears. Its second wheel has 5 cherries, 7 oranges, 3 bars, 1 bell, and 4 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 this 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 a gambler gets three of a kind. Which result should give the highest payout? Explain your reasoning.