

Practice

- 1) There are 6 people in a race. In how many ways can they finish first, second or third ?

- 2) A golfer has 4 different hats, 3 gloves and 2 pairs of shoes to pick from for his round of golf. In how many ways can he make his choices ?

- 3) In Canada, postal codes consist of 6 characters -- three letters and three digits. Each postal code starts with a letter and alternates with a digit.
 - a. How many postal codes are there ?
 - b. How many start with the letter S ?
 - c. How many start with the letter S and end in the digit 8 ?
 - d. How many start with the letter S, digit 6 and NO letter or digit is repeated ?

- 4) Using the digits $\{ 1, 2, 3, 4, 5 \}$, how many positive three digit integers can be made if:
 - a. there are NO restrictions
 - b. it is odd and repetition is allowed ?
 - c. it is odd and repetition is NOT allowed ?
 - d. Repeat question a, b and c if the digits you can choose are $\{ 0, 1, 2, 3, 4, 5 \}$.

- 5) In how many ways can ALL of the letters of the word TRAVEL be arranged if:
 - a. there are NO restrictions ?
 - b. it must start with T ?
 - c. it starts with a consonant and ends in a vowel ?
 - d. the letters TR must stay together ?

- 6) How many positive even three-digit integers less than 400 can be formed from the digits $\{ 0, 1, 2, 3, 4, 5 \}$ if:
 - a. repetition is allowed ?
 - b. No digit is repeated ?

- 7) You are ordering dinner at a restaurant. How many ways can you order a meal if you have two choices for a drink (coffee or tea), three main courses to choose from (chicken, beef, or fish) and two desserts (pie or cake) ?
- Draw a tree diagram
 - Use the fundamental counting principle
- 8) Eight sprinters are in the final of a race. How many different ways there to award the gold, silver and bronze medals ?
- 9) Television stations in Canada usually have call letters that are 4 letters long and begin with the letter C. If the CRTC made this a law in Canada, then how many television stations could the CRTC license ?
- 10) Repeat the above question using the restriction, repetition of letters is NOT allowed
- 11) Some license plates consist of 3 letters followed by 3 numbers. How many different license plates are possible if:
- if there are NO Restrictions
 - if the letters must be DIFFERENT
 - if the letters are different and the first digit can't be 0
- 12) How many two digit whole numbers can be formed using the digits: 0,1,2,4,6,7,8,9 (8 digits) ?
- Repetitions are allowed
 - Repetitions are not allowed
- 13) An ice cream parlor features 64 flavors and 20 toppings, in 3 sizes. How many different sundaes can be made ?

- 14) How many EVEN two digit numbers are there ?
- 15) How many EVEN two digit numbers can be made using the digits 1 , 2 , 3 , 4 , 5 , 6 , 7 , 8 ?
- Repetitions are not allowed
 - Repetitions are allowed
- 16) How many two digit numbers can be formed using the digits 0 , 2 , 4 , 6 , 8 if:
- Repetitions are allowed
 - Repetitions are not allowed
- 17) How many ODD four digit numbers can be made from all of the digits, if:
- Repetition is allowed
 - Repetition is not allowed
- 18) In how many ways can all of the letters of the word PROBLEM be arranged ?
- 19) In how many ways can all of the letters of the word PROBLEM be arranged if the arrangement must start with a consonant and end in a vowel ?
- 20) How many ways can the letters in the word PENCIL be arranged?
- 21) If there are four different types of cookies, how many ways can you eat all of them?
- 22) If three albums are placed in a multi-disc stereo, how many ways can the albums be played?
- 23) How many ways can you order the letters in KEYBOARD if K and Y must always be kept together?
- 24) How many ways can the letters in OBTUSE be ordered if all the vowels must be kept together?
- 25) How many ways can 4 rock, 5 pop, & 6 classical albums be ordered if all albums of the same genre must be kept together?

HW: MC 4,10,20