

## Foundations of Mathematics 12

### Methods of Counting

#### Introduction:

Counting objects is important in determining chances and probabilities of an event occurring. Objects can be arranged in different ways which means a solution hides behind each different arrangement. This guide will introduce you to the different concepts around counting objects and their arrangements. The Unit Project on investing will provide a more in depth experience in gambling.

#### Note Taking:

Note taking is an important skill in any math course. When taking notes you want to focus on important terms, normally in **Bold** or in the margin of this textbook, formulas which are treated the same way, at least one of the examples shown with the your turn section completed, and the In Summary box at the end of the sections. Notes are made for your benefit not mine, so make sure you can understand what you have written. You will be able to use these notes if you choose to do an interview.

#### Resources Needed:

Foundations of Mathematics 12 text or Internet text access

#### Key Terms:

Fundamental Counting Principle, permutation, factorial notation, pathway problem, combination

#### Expectations:

- 1) Develop an example that you can use to explain how the Fundamental Counting Principle is used to solve problems.
  - Complete the Investigate the Math activities on pages 228-9
  - Read and take notes on pages 228→234
  - Complete **only** Check Your Understanding problems on page 235
- 2) Create an instructional brochure that can be used to explain what **factorial notation** is and how it can be used to solve different types of **permutation** problems.
  - Complete the Learn About/Investigate the Math activities on pages 238-9, 246-7
  - Read and take notes on pages 238→243, 246→254
  - Complete **only** the Check Your Understanding problems on pages 243, 255
- 3) Using a pathway problem of your own design, outline two procedures that can be used to find the correct solution to the problem you created.
  - Complete the Investigate the Math activities on pages 260-1
  - Read and take notes on pages 260→266
  - Complete **only** Check Your Understanding problems on page 266

- 4) Develop a set of step-by-step instructions that can be used to teach another student how to solve a problem involving **combinations**
  - Complete the Explore/Learn about the Math activities on pages 271, 273-4
  - Read and take notes on pages 271→272, 273→279
  - Complete the Further/Check Your Understanding problems on pages 272, 280
  
- 5) Using two questions from this section, explain the difference between a **permutation** problem and a **combination** problem.
  - Complete the Investigate the Math activities on pages 283-4
  - Read and take notes on pages 283→287
  - Complete the Check Your Understanding problems on pages 288
  
- 6) Solve the Practising problems listed below: (you need to choose the questions that will best demonstrate your understanding of the expectations. The questions listed below are only a suggestion)
  - #4, 5, 6, 9, 10, 11, 12, 15, 16, and 18 on pages 235→237
  - #5, 6(acd), 7, 8, 11(ab), 12, 13, 14, and 18 on pages 244→245
  - # 5, 6, 7, 9, 10, 11, 13, 15, 16, and 19 on pages 255→257
  - #4, 5, 6, 9, 11, 12, 15, 17, and 20 on pages 267→269
  - #4, 5, 6, 7, 8, 9, 11, 14, 15, and 18 on pages 280→282
  - #4, 5, 6, 9, 10, 12, 13, 14, and 18 on pages 288→290

**Evaluation:**

At the end of each learning guide, you have an option of how you would like to be evaluated. The only exception is the Unit Tests which are mandatory. You can choose to demonstrate your knowledge of the expectations with an interview, PowerPoint presentation, poster, video, brochure, ... etc. The other option is a quiz. It is up to you how the evaluation will take place and be warned some methods take more time than others.