

Foundations of Mathematics 12

Probability

Introduction:

All decisions are made based on the chances of receiving a successful outcome. This is the basis of probability and can be applied in many aspects of your regular life. This guide will introduce you to the different concepts around probability and how to calculate the chances of observing a positive or negative result. 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:

fair game, experimental probability, theoretical probability, odds in favour, odds against, mutually exclusive, Principle of Inclusion and Exclusion, dependent events, conditional probability

Expectations:

- 1) Using a standard deck of cards, explain the different ways in which **probability**, or **odds** can be calculated.
 - Complete the Explore/Investigate the Math activities on pages 302, 304, 313-4
 - Read and take notes on pages 302→303, 304→309, 313→321
 - Complete **only** Further/Check Your Understanding problems on pages 303, 310, 321

- 2) Referencing the concept of **mutually exclusive** events, explain the differences in the way “**and**” and “**or**” probabilities are calculated. (intersection/union)
 - Complete the Learn Investigate the Math activities on page 328
 - Read and take notes on pages 328→337
 - Complete **only** the Check Your Understanding problems on page 338

- 3) Develop a PowerPoint presentation which outlines a series of step-by-step instructions that another student can use in order to solve a **conditional probability** problem.
 - Complete the Learn About the Math activities on pages 344-5
 - Read and take notes on pages 344→350
 - Complete **only** Check Your Understanding problems on page 350

- 4) Create two word problems of your own design, including answers, which can be used to describe the difference between probabilities of **dependent** and **independent** events
 - Complete the Investigate the Math activities on page 354
 - Read and take notes on pages 354→359
 - Complete the Check Your Understanding problems on page 360

- 5) 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, 6, 7, 9, 10, 12, 13, 15, and 16 on pages 310→312
 - #4, 5, 6, 7, 8, 10, 11, 13, 14, and 19 on pages 321→324
 - #4, 5, 7, 8, 9, 12, 13, 15, 16, and 19 on pages 338→342
 - #4, 5, 6, 9, 10, 13, 15, 18, and 19 on pages 351→353
 - #4, 5, 6, 7, 8, 9, 12, 15, and 17 on pages 360→363

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.