MATH 1 – Sections 16 & 17 Chapter 11

Chapter 11 teaches you Counting Methods further enhancing your knowledge of Chapter 2 and prepares you for Chapter 12. Read page 671 before studying the chapter.

- In 11.1 you learn how to list when needed elements of the set of outcomes when a task with one or more parts is performed. The method is useful only for short lists. In later sections you will learn counting "how many" such outcomes in the list are present without actually having to list.

  HW 11.1: 1−6, 9−33.

- Start with the Fundamental Counting Principle(p.682) in 11.2. Go over examples 1−8. Recall the Factorial notation $n!$and the Factorial formula $n! = n\cdot(n-1)\cdot\cdots 2\cdot 1$ (p.686). By definition $0! = 1$. Go over worked examples.

  HW 11.2: 3, 4, 5−14. 15, 17, 19, 23, 25, Odd numbered problems from 31−57.

- Permutations nPr (formula p.693 and guidelines on p.699) and Combinations nCr (formula p.696 and guidelines on p.699) are two important topics. Go over worked examples.

  HW 11.3: Odd numbered problems from $1-31$, 35, 37, 41, 43, 53, 55.

- The connection between Pascal's Triangle and nCr is found on pages 706−708. Application to the Binomial Theorem (p.709) follows.

  HW 11.4: Odd numbered problems from $1-27$.

- Application of counting methods to Set Theory is discussed in 11.5. The Complement Principle (p.712), the General Additive Counting Principle (p.714) and the Special Additive Counting Principle (p.714 applies only to disjoint sets) are important and will be used later. Go through all worked examples.

  HW for 11.5: Odd numbered problems from $1-39$.