

# **Data Management Notes**

Intro to Statistics

Qinghao Hu

September 13, 2025

# Contents

<b>1</b>	<b>Unit 1</b>	<b>2</b>
1.1	Lecture 1 . . . . .	2
1.1.1	The Fundamental or Multiplicative Counting Principle . . . . .	2
1.1.2	Additive Counting Principle . . . . .	2
1.2	Lecture 1.2 . . . . .	2
1.3	Like Term Permutations . . . . .	2
1.4	Pascal Triangle . . . . .	2
1.5	Venn Diagrams . . . . .	3

# Chapter 1

## Unit 1

### 1.1 Lecture 1

#### 1.1.1 The Fundamental or Multiplicative Counting Principle

If a task is made up of *several stages*, then the number of choices is the **product** of the number of possibilities at each stage.

#### 1.1.2 Additive Counting Principle

In a situation with actions that cannot occurred at the "same time" than the number of possibilities is the sum of the possibilities of all the actions

!!! Remember,  $0! = 1$

### 1.2 Lecture 1.2

A permutation is an **ARRANGEMENT** of items in a definite order.

$${}_nPr = \frac{n!}{(n-r)!}$$

and

$${}_nPr = P(n, r)$$

### 1.3 Like Term Permutations

The number of permutations of a set of  $n$  objects containing  $a$  identical objects of one kind,  $b$  identical objects of a second kind,  $c$  identical objects of a third kind and so on is  $\frac{n!}{a! * b! * c!}$

### 1.4 Pascal Triangle

Do what the hell you want to do about Pascal

## 1.5 Venn Diagrams

Concepts:

- In mathematics, a set is a well-defined collection of *distinct* objects/elements
- A Venn diagram is used to organize the (number of) elements in different *set* of data.
- Elements that are in set  $a$  and set  $b$  are described as the intersection of  $A$  and  $B$ . The notation of  $A \cap B$  describes this situation
-