



## 1 : Basic terminology, Populations and Samples.

1 : المصطلحات الأساسية , المجتمع والعينات.

### What is Probability?

Probability theory is the study of the mathematical rules that govern random events.

### What is Statistics?

Statistics is the application of probability to the collection, analysis, and description of random data.

Statistics is used to:

- I Design experiments
- I Summarize data
- I Make conclusions about the world
- I Explore complex data

### Applications of Probability and Statistics in Computer Science:

- Machine Learning
- Data Mining
- Artificial Intelligence
- Simulation
- Image Processing
- Computer Graphics
- Visualization
- Software Testing
- Algorithms



## Applications of Probability and Statistics General:

- Gambling (not recommended)
- Stock Market Analysis
- Politics
- Sports
- Demographics
- Medicine
- Economics
- All Sciences!!

## Alan Turing: Connecting CS and Probability

“Father of Computer Science”

### Most famous for:

- Computability, Turing machine
- Stored-program computer
- Turing test
- WWII cryptanalysis
- Wrote a dissertation on probability theory!
- Turing used probability and statistics to crack Enigma

