CHAPTER 1

DEFINITION OF STATISTICS

Statistics is the science of conducting studies to collect, organize, summarize, analyze and draw conclusions from data.

Descriptive and Inferential Statistics

A variable is a characteristic or attribute that can assume different values.

Data are the values (measurements or observations) that are variables can assume. Variables whose values are determined by chance are called **random variables**.

A collection of data values forms a **data set**. Each value in the data set is called a **data** value or a **datum**.

Data can be used in different ways. Statistics can be divided into two main areas depending on how data are used. The two areas are **Descriptive Statistics** and **Inferential Statistics**.

Descriptive Statistics consists of the collection, organization, summation and presentation of data.

Example:

1) Nine out of ten on the job fatalities are men.
2) Expenditure for the cable industry were 5.66 dollar billion in 1996.
3) The median house hold income for people aged 2534 is 35,888 dollars.
4) The national average annual medicine expenditure per person is 1052 dollar.

A **population** consists of all subjects (human or otherwise) that are being studied.
A **sample** is a subgroup of the population.

Inferential Statistics consists of generalizing from sample to populations, performing hypothesis testing, determining relationship among variables and making predictions.

Example:

1) By 2040 at least 3.5 billion people will run short of water.

2) Experts say that mortgage rates may soon hit bottom.
3) A diet high in fruits and vegetables will lower blood pressure.
4) In 2030, the number of high school graduates will be 3.2 million students.

Variables and Types of Pata

Variables can be classified as quantitative or qualitative

Qualitative variables are variables that can be placed into distinct categories, according to some characteristics or attribute.

Example:

1) Marital status of nurses in a hospital.
2) Colours of automobiles in a shopping centre parking lot.

Quantitative variables are numerical in nature and can be ordered or ranked.

Example:

1) Time it takes to run a marathon
2) capacity of the NFL football stadium
3) Ages of people living in a personal care home

Discrete variables assume values that can be counted.

Example:

1) Number of cups of coffee served in a restaurant.
2) The number of ads on a one-hour television show.
3) Number of pizzas sold by Pizza Express each day.

Continuous variables can assume all values between any two specific values. They are obtained by measuring.

Example:

1) The time it takes a student to drive to school.