Measurement Systems

Introduction

- Weights and measures were among the earliest tools invented by man. Primitive societies needed rudimentary measures for many tasks: constructing dwellings of an appropriate size and shape, fashioning clothing and bartering food or raw materials.
- As societies evolved, measurements became more complex. The invention of numbering systems and the science of mathematics made it possible to create whole systems of measurement units suited to trade and commerce, land division, taxation, and scientific research.
- Although the concept of weights and measures today includes such factors as temperature, luminosity, pressure, and electric current, it once consisted of only four basic measurements: mass (weight), distance or length, area, and volume (liquid or grain measure).

The English System

- The measurement system commonly used in the United States today is nearly the same as that brought by the colonists from England.
- The "yard" as a measure of length can be traced back to early Saxon kings. They wore a sash or girdle around the waist that could be removed and used as a convenient measuring device. The word "yard" comes from the Saxon word "gird" meaning the circumference of a person's waist.
- Standardizing various units and combining them into loosely related systems of measurement units sometimes occurred in fascinating ways.

The English System

- Tradition holds that King Henry I decreed that a yard should be the distance from the tip of his nose to the end of his outstretched thumb.
- After 1959, the U.S. and the British inch were defined identically for scientific work and were identical in commercial usage.
- The U.S. customary bushel and the U.S. gallon, and their subdivisions differ from the corresponding British Imperial units. Also, the British ton is 2240 pounds, whereas the ton generally used in the United States is the short ton of 2000 pounds. The American colonists adopted the English wine gallon of 231 cubic inches.

Metric System

- The metric system is a relatively modern system (just over 200 years old) which has been developed based on scientific principles to meet the requirements of science and trade.
- The metric system offers a number of substantial advantages:
  - **Simplicity**: The Metric system has only 7 basic measures, plus a substantial number of measures using various combinations of these base measures. The imperial system (prior to the UK converting to metric) and the USA system have over 300 different measures of which many are ambiguous.

Metric System

- **Ease of calculation:** All the units in the metric system are multiplied by 10 (to make larger units) or divided by 10 (to make smaller units). For example a kilometer is 1000 meters (10 *10 * 10).
- **International Standard:** With the exception of the USA, all major countries have converted to the metric system (although in some countries, such as the UK, the conversion to metric is not yet complete).