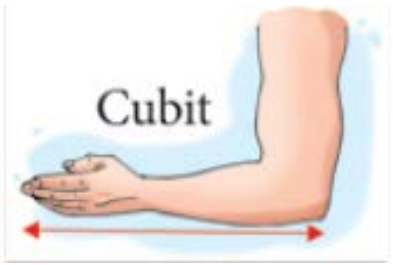
Introduction of Measures of Length

There are two units for measuring length, personal unit and arbitrary units.

Personal Units

Parts of our body are used for measuring length. These are called personal units of measurement.




Pace

Introduction of Measures of Length

Limitations of Personal Units

- These vary from person to person.
- These may not give accurate measurements.
- Long distances are difficult to measure.
- Measurements cannot be expressed in number form accurately.

Arbitrary Units

When length is measured in terms of an object of fixed length, the measuring object serves as an arbitrary unit. Arbitrary units always give the same measurements.

Limitations of Arbitrary Units

- Arbitrary units are not universal in nature. Also they are prone to wear and tear.
- It is not possible to measure long distances using these units.
- Measurement cannot be expressed in number form accurately.
- All these limitations or drawbacks can be overcome by using a standard unit of measurement of length.

Introduction of Measures of Length

Non-Standard Units of Length

In earlier days, when people had to measure length, they didn't have a fixed unit to measure. They used units such as **handspan** (the distance between the thumb and little finger of our hand when the fingers are spread out) or **cubit** (the length form the tip of our middle finger to the elbow, that is, for earn) or **stride/ pace** (the distance in terms of steps or pace) to measure different lengths.

But these units were not uniform or standardized, i.e. while measuring the same object, different people used to give different measurements for them as these lengths of body parts differed from person to person.

So, to be accurate, some uniformity was brought and standard units and devices to measure length were invented.

Standard Unit of Length

You must have seen people using metre-rods and Metre-tapes for measuring lengths.

There are several units for measuring length but in this class we will learn only **centimeter** (cm), **metre** (m) and **kilometer** (km).

Introduction of Measures of Length

⇨ Centimetre (cm)

This is a small units of length. It is used to measure small lengths such as the length of pen, a pencil book, etc. centimeter is written as '**cm**' in short form.

⇨ Meter (m)

This is the standard unit of length. It is used to measure the length of a wall, cloth, height of a tower etc. meter is written as '**m**' in short form.

⇨ Kilometer (km)

Very long length cannot be measured in meters. We use kilometer to do so, kilometer is written as '**km**' in short form.

⇨ Relationship between the Units of Length

1 kilometer (km) = 1,000 meter (m)

1 meter (m) = 100 centimeter (cm)