

## Different scales of temperature



There are three temperature scales. These are:

**Celsius scale (C):** The lower limit for a Celsius scale is **0°C** while the upper limit is considered to be **100°C**.

**Fahrenheit scale (F):** The lower limit for a Fahrenheit Scale is **32°F** while the upper limit is **212°F**.

**Kelvin (or Absolute) Scale (K):** The lower limit for a Kelvin scale is **273.15°K** while the upper limit is **373.15°K**.

**Relation among different scales:**

i)  $C/5 = (F - 32)/9$       ii)  $K = C + 273.15$



### Temperature Conversion

Celsius, Fahrenheit and Kelvin are the three common temperature scales. Each of the scales has its uses, so it is likely that you will encounter them and would require you to convert between them. In the table below, we have listed the conversion formula.

From	To Fahrenheit	To Celsius	To Kelvin
Fahrenheit (°F)	°F	$59 \times (°F - 32)$	$°F - 32 \times 59 + 273.15$
Celsius (°C)	$(°C \times 95) + 32$	(°C)	$°C + 273.15$
Kelvin (K)	$(K - 273.15) \times 95 + 32$	$K - 273.15$	K

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### Measuring Temperature:

The device that measures the temperature is known as a thermometer. There are various kinds of thermometers depending on the purpose or usage of the same.

The various kinds of thermometers are as follows:



### 1. Clinical Thermometer:

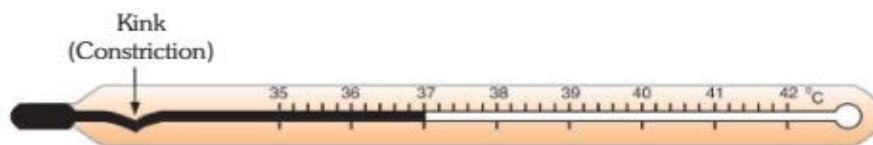
This type of thermometer is used to measure the body temperature only and is used in hospitals by doctors and also at home.

A clinical thermometer generally consists of a long narrow glass tube with a bulb at one end that contains mercury. A thread of shining mercury is seen along the scale indicated on the thermometer, which helps in taking the reading.

The scale used in India is the Celsius scale and is indicated by the symbol  $^{\circ}\text{C}$ .

The normal human body temperature is  $37^{\circ}\text{C}$ , and so the range of this thermometer is from  $35^{\circ}\text{C}$  to  $42^{\circ}\text{C}$ . To take the reading, the bulb of the thermometer is kept below the tongue for a minute.

Nowadays due to the toxic nature of mercury and issues of the thermometer being broken and spilling it, digital thermometers are in use which are safe and do not contain mercury.



A clinical (doctor's) thermometer

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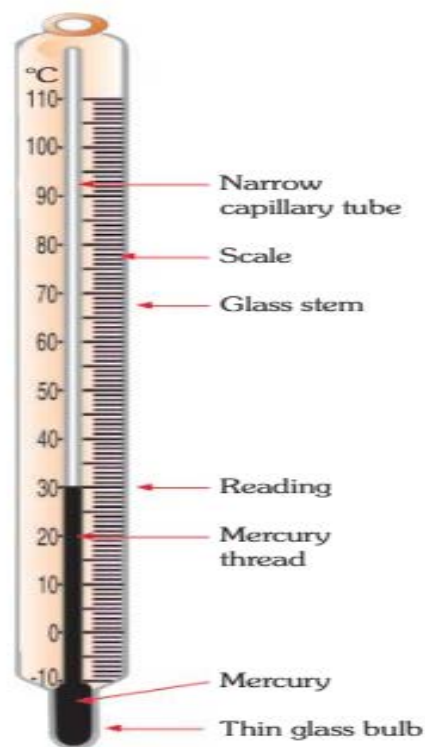


### 2. Laboratory Thermometer:

This thermometer is used to measure the temperature of all objects other than a human body.

It consists of a long glass tube without a kink and has a bulb containing mercury at the end of the tube.

This is generally used in laboratories for checking the boiling points, freezing points etc. Hence the range of this thermometer is from  $-10^{\circ}\text{C}$  to  $110^{\circ}\text{C}$ .



**A mercury thermometer is commonly used in a laboratory**