Brainbox learn easy

Chapter 03

In our daily life, we come across many objects. Some are hot while others are cold. For example coffee is hot and ice cream is cold.

Let us try these experiments to prove that sun gives heat.

An aluminum sheet is kept in the sun and one in your room. After some time if we touch the sheet kept outside immediately you will withdraw your hand because it is HOT while the sheet kept in the room is COLD.

Let us try another experiment:

Take a magnifying glass. Keep a sheet of paper on a table outside the house. Using the magnifying glass focus the sun rays at one point. Soon the position where the sun light is focused becomes hot and it catches fire.

Man can generate heat by other natural sources such as wood, coal, gas. These are called Fuels.

Measuring Temperature

We can all sense if an object is hot or cold by touching it but we cannot tell measure of hotness or coldness.

A reliable measure of the hotness of an object is its **temperature**.

Temperature is measured by a device called **thermometer**.

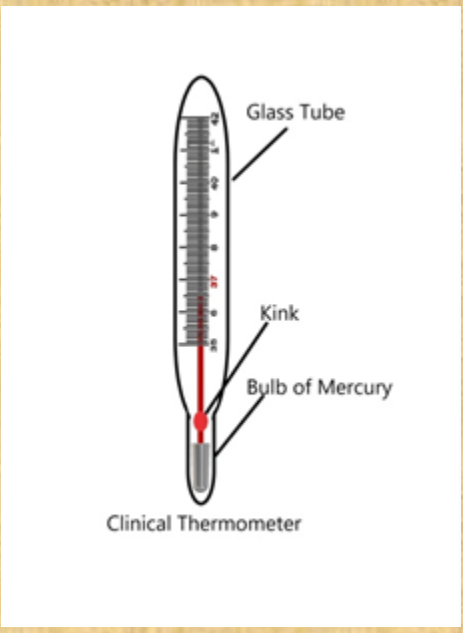
Have you seen a thermometer? Of course yes! Recall that when you or someone else in your family had fever, the temperature was measured by a thermometer. The thermometer that measures our body temperature is called a **clinical thermometer**.

A clinical thermometer is a long narrow tube with same thickness all along the length of the tube. On one side of this tube is a bulb that contains mercury.

For reading the temperature, there is a scale printed on thermometer.

℃ is the unit of temperature

A very fine tube originates from the bulb called capillary tube. When the temperature rises, the mercury expands in this tube. The capillary tube is bent near the bulb and this is called “KINK”. The kink prevents the mercury from flowing back.



Between the two consecutive numbers, there are some divisions on the scale. If there are 10 divisions, each division is equal to 1/10 = 0.1 and if there are 5 divisions, each division is equal to 1/5 = 0.2.

Normal temperature of human body is 37.

The temperature of every person may not be 37°C. It could be slightly higher or slightly lower. Hence, the scale on the thermometer is from 35 to 42.

HOW TO USE A THERMOMETER

ACT 1: To measure your body temperature,

- Wash the thermometer, preferably with an antiseptic solution.
- Hold it firmly and give it a few jerks. The jerks will bring the level of mercury down. Ensure that it falls below 35°C. Now place the bulb of the thermometer
- Under your tongue.
- After one minute, take the thermometer out and note the reading. This is your body temperature. The temperature should always be stated with its unit, °C.

NOTE: ALWAYS REMEMBER NEVER USE THE CLINICAL THERMOMETER TO MEASURE TEMPERATURE OF HOT OBJECTS.

LABORATORY THERMOMETER

How do we measure the temperature of other objects? For this purpose, there are other thermometers. One such thermometer is known as the laboratory thermometer. This is used in science laboratory. It is similar to clinical thermometer but it is long and narrow.

A laboratory thermometer reads temperature from –10°C to 110°C.

Let us do a simple activity to understand how to use a laboratory thermometer

Take some hot water in a beaker or a mug. Dip the thermometer in water. Wait till the mercury thread becomes steady and note the temperature. Now take out the thermometer from water. Observe carefully what happens.

We notice that as soon as the thermometer is taken out of water, the level of mercury begins to fall. This means that the temperature must be read while the thermometer is still in water. You may repeat the same with cold water.

You may recall that while taking your own temperature, you have to take the thermometer out of your mouth to note the reading. The reading in the thermometer used to measure body temperature did not fall because of **kink**.