BAL BHARATI PUBLIC SCHOOL, PITAMPURA, DELHI – 110034

SUBJECT:-SCIENCE

CHAPTER:- HEAT

TOPIC:-HOT AND COLD

GUIDELINES FOR STUDENTS

Dear Students

*Solve the assignment in Science notebook.

*Suitable video links have been provided

*Do read textbook or NCERT too for better understanding of these concepts.

You may follow the given link to refer to class 7 science ncert book.
http://ncert.nic.in/textbook/textbook.htm?gesc1=4-19 (Page 35, 36 and 37)

Living Science Book

file:///C:/Users/user/Downloads/DSC_200405_161728.pdf((Read page 44, 45, 46, 47, 48 and 49 from living science)

SUBTOPICS:

1. HOT AND COLD
2. THERMOMETER

1. Hot and cold

In our day-to-day life, we come across many hot and cold objects. Ice is cold and tea is hot. We also know that some objects are hotter than others, while some are colder than others. This is generally done by **simply touching** the objects.

Sensation of hotness or coldness of the objects is **heat**.

BUT HOW DO WE COMPARE THIS SENSATION?

Let us try this activity (Do this in the presence of your parents):

- Take three vessels.
- Fill them with ice cold water, tap water and hot water (tolerable) respectively.
- Dip your left hand in ice cold water and right hand in hot water for few seconds
- Now dip both of your hands in warm water.
- Left hand senses that the water is hot but right hand tells something else.
- This proves that sense of touch cannot be used as a reliable technique to measure temperature.

Feeling coldness and hotness of water

NOTE:-Heat cannot be seen, it can only be felt (Rub your hands together and observe).

NOTE:-

A. There are two effects of heat

a) Heat causes increase in temperature

b) Heat causes change of state.

For example: On heating, ice, which is in solid state, is converted into water (liquid state).

On further heating, water changes to steam. (Gaseous state).

B. Heat always flows from a body at higher temperature to a body at lower temperature

2. THERMOMETER

Measurement of temperature is very important in our daily life.

* The device that measures temperature of an object is known as a **thermometer.**

* A thermometer works on the principle that substances expand when heated and contract on cooling

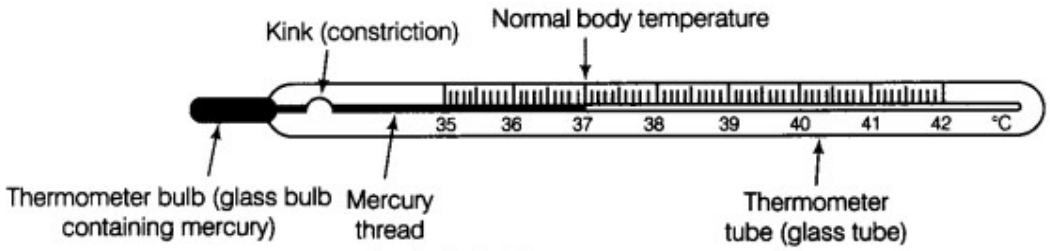
* A thermometer consists of

a) Capillary tube

b) Small bulb at its end (filled with alcohol or mercury that appear as shining thread)

*Upper end of the tube is sealed so that the liquid does not evaporate.

* The space above the liquid in the capillary is evacuated so that the liquid expands freely



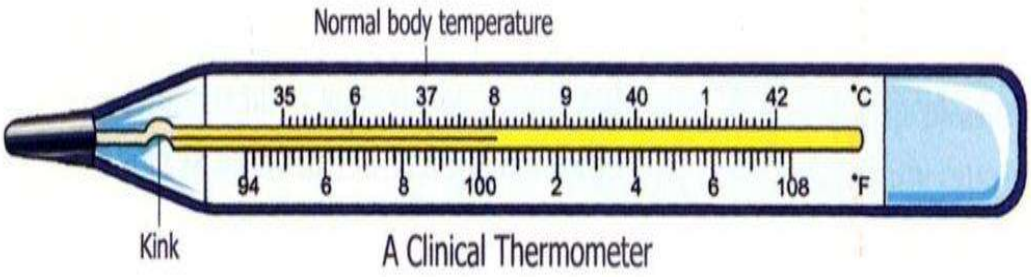
A clinical thermometer

HOW DOES IT WORK:

When the bulb of a thermometer is dipped in any liquid, the shining thread of mercury in the bulb rises and we read the level of mercury on the scale drawn on the stem of thermometer which tells the reading.

In Doctor's/clinical thermometer we will find that the scale on its stem shows temperature from 35 degree Celsius to 43 degree Celsius.

* In US we make use of Fahrenheit scale and in India we make use of Celsius scale.



A Clinical Thermometer

*Mercury is a toxic substance and is very difficult to dispose off if a thermometer breaks.

Reasons for using Mercury and not water as the Thermometric Liquid

- Expands easily and uniformly on heating.
- Can be used over a wide range of temperatures.
- Easily visible, being opaque and shining.
- Does not stick to the sides of a glass tube.

While handling a thermometer we must follow the following precautions:

* Thermometer should be washed before and after use, preferably with an antiseptic solution.

*Read the thermometer keeping the level of mercury along the line of sight.

*Handle the thermometer with care. If it hits against some hard object, it can break.

* Don't hold the thermometer by the bulb while reading it.

For better understanding watch the following video link.

https://youtu.be/uLtWRK_Pd5c

Watch this video till (6min19s)

Hot and cold objects - https://www.youtube.com/watch?time_continue=14&v=uLtWRK_Pd5c&feature=emb_logo

Now answer the assignment that follows:

Assignment

1. Name the two types of temperature scales.

2. Distinguish between heat and temperature.

(Take the help of the video link shared)

3. Name the form of energy which causes the sensation of hotness or coldness.

4. Give the range of a clinical thermometer.

5. Why is mercury used in the thermometers in place of water? Find out which other liquid

can be used in place of this?

6. Draw a well labelled diagram of a clinical thermometer.

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