Subject: Science

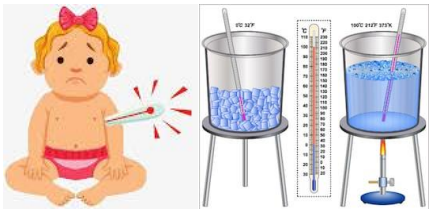
Level: Standard 3

Strand: Form and Function

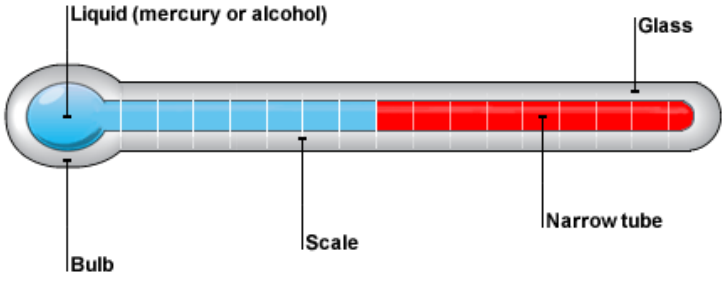
Topic: How to use a laboratory thermometer

Key Points:

- Thermometers are used to measure the temperature of a substance, that is how hot or cold it is.
- The unit for temperature is degrees Celsius or ^{o}C
- There are different types of thermometers. Two examples are:
  - clinical thermometers: used to measure body
  - laboratory thermometers: used to measure the temperature of substances in the Science Laboratory or outdoors



- A laboratory thermometer is used to measure temperatures between -10˚C to 110˚C.
- A clinical thermometer measures between 35°C to 42°C
- A thermometer has a long stem which is marked to show the temperature.
- It also has a bulb at its base.
- This bulb stores a liquid which increases in volume when heated.
- The heated liquid moves along the stem allowing the temperature to be measured.
- The bulb should be fully immersed in the substance whose temperature is being measured.
- The stem should be held at the top, so the temperature of the user does not affect the reading.

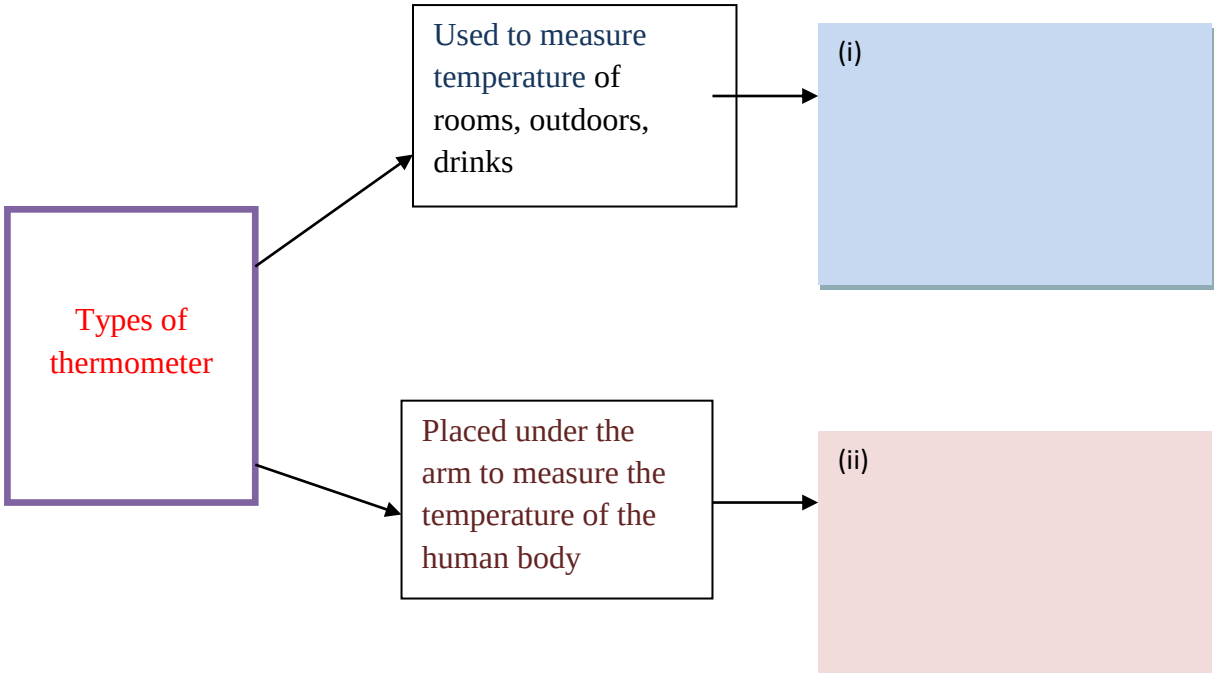


Activity

1. TYPES OF THERMOMETER

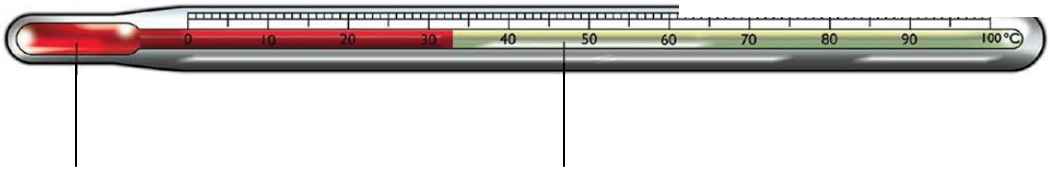
Identify the Clinical and Laboratory thermometers in the Flow Chart below.

Write the name of the thermometer in the appropriate box.



2. OBSERVING A LABORATORY THERMOMETER

The picture below shows the parts of a laboratory thermometer.



Bulb Stem

(i) If the temperature on water is being measured, what part of the thermometer must be in the water?

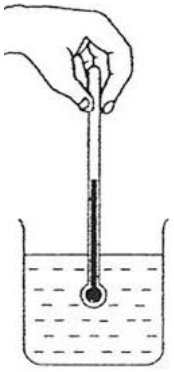
_____

(ii) What part of the thermometer should be held when measuring temperature?

_____

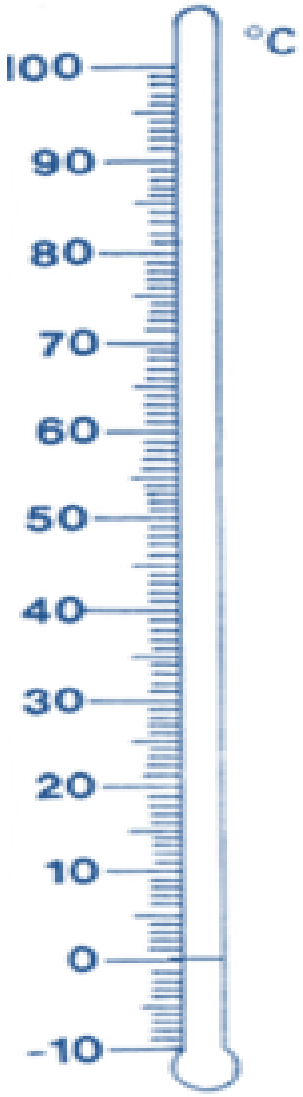
(iii) What unit is used when recording measurements of temperature?

_____



3. READING THE THERMOMETER

(i). Examine the scale on the thermometer below and answer the questions



(a) What is the highest temperature that can be recorded by this thermometer?

_____

(b) Is the temperature in (a) considered to be hot or cold?

_____

(c) What is the lowest temperature that can be recorded by this thermometer?

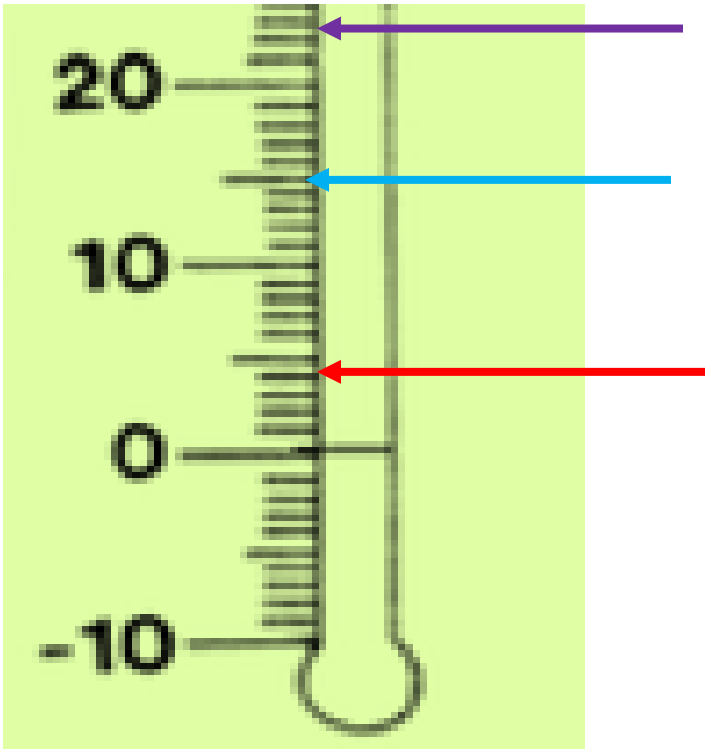
_____

(d)What is the unit used to record measurements of temperature?

_____

(ii) Read the temperatures shown by the arrows on the two thermometers below. Record the temperature on lines a to g.

a.



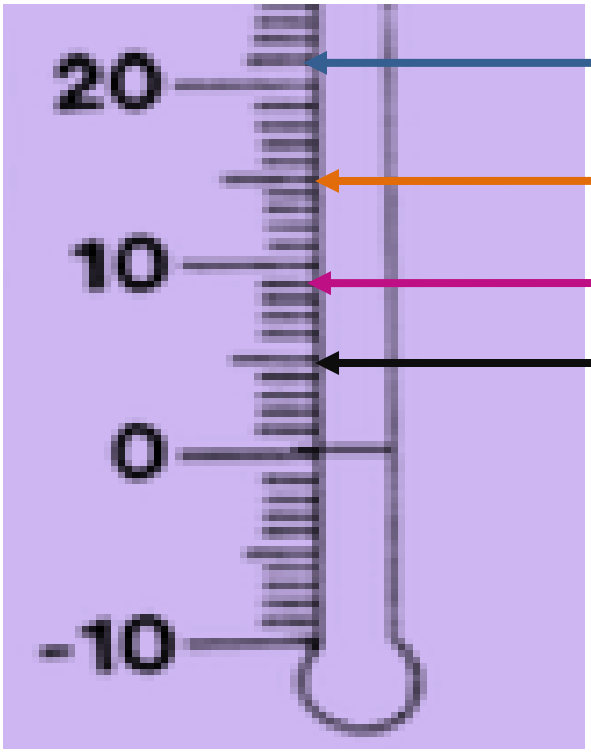
_____

b.

_____

c.

_____



d.

_____

e _____

f _____

g _____

Assessment

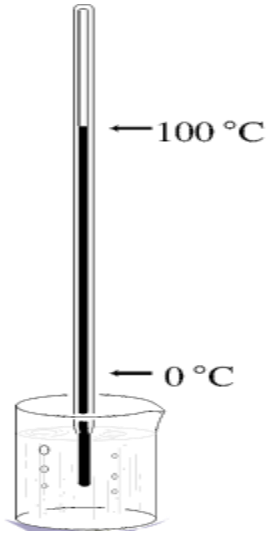
4. Name the thermometers shown in the pictures

(i)



_____

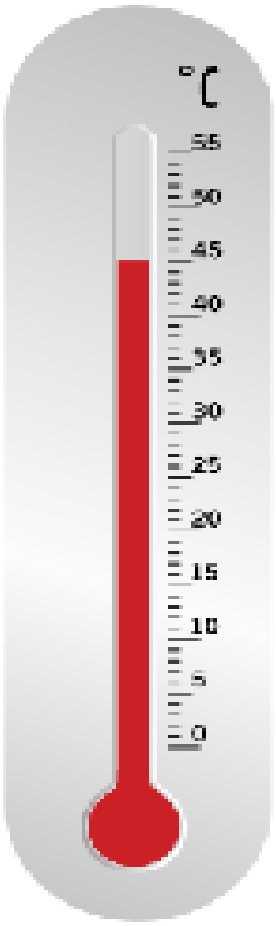
(ii)

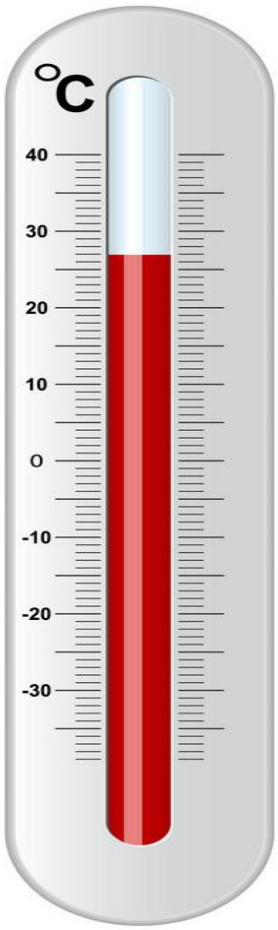


_____

5. Read the temperatures on the thermometers below and record the temperature on the lines.







(i) _____ (ii) _____ (iii) _____

Answer Key

1. Types of thermometer:
   (i) Laboratory thermometer
(ii) Clinical thermometer

2. (i) The bulb
   (ii) The stem
   (iii) ^{o}C

3 (i)
a. 100^{o}C
b. hot
c. – 10 ^{o}C
d. ^{o}C

3 (ii)
a. 20 ^{o}C
b. 10 ^{o}C
c. 0 ^{o}C
d. 21^{o}C
e. 15^{o}C
f. 9^{o}C
g. 5^{o}C

4. (i) Clinical thermometer
   (ii) Laboratory thermometer

5. (i) 40^{o}C
   (ii) 45^{o}C
   (iii) 27^{o}C

References:

1. Use of thermometer: https://www.shutterstock.com/search/water+thermometer https://www.clipart.email/clipart/body-temperature-clipart-63532.html
2. Diagram of basic thermometer: http://www.bbc.co.uk/staticarchive/0dc80d3e630bfc3b4d1cf4d413fbcbe1f089b019.gif
3. Parts of laboratory thermometer: https://www.igcsephysics.com/cambridge/sample/thermal_physics/page98.html
4. Reading thermometer scale: https://www.commoncoresheets.com/Temperature.php
5. Clinical thermometer: https://www.indiamart.com/proddetail/mercury-laboratory-thermometer-9503278588.html
6. Holding thermometer: https://www.sarthaks.com/24510/four-arrangements-measure-temperature-ice-beaker-with-laboratory-thermometer-are-shown

Acknowledgement

Activity with Picture	**Reference**
2. Observing a Laboratory Thermometer	https://www.igcsephysics.com/cambridge/sample/thermal_physics/page98.html Copied from Google Images IGCSE Physics - Unit 2 Thermal physics igcsephysics.com
3. Reading the Thermometer (i)	https://www.tes.com/teaching-resource/temperature-and-thermometers-6435465 Copied from Google Images Temperature & Thermometers | Teaching Resources tes.com
3. Reading the Thermometer (ii)	https://www.tes.com/teaching-resource/temperature-and-thermometers-6435465 Cropped from Google Images Temperature & Thermometers | Teaching Resources tes.com
Assessment 4. Name the thermometers (i) and (ii)	http://www.physics.brocku.ca/PPLATO/h-flap/phys7_2.html#section_2.4 Cropped from Google Images PPLATO | FLAP | PHYS 7.2: Temperature, pressure and the ideal gas lawsmet.reading.ac.uk
Assessment 5. Read the temperatures on the thermometers	https://www.internet4classrooms.com/skill_builders/temperature_math_fourth_4th_grade.htm. Copied from Google Images Fourth Grade Interactive Math Skills - Temperatureinternet4classrooms.com