SOLUTIONS – TEXTBOOK QUESTIONS

CBSE Class 6 Science | Chapter 7: Temperature and its Measurement | "Let us enhance our learning" Q1–Q14 with in-text questions

How to use: Try each question from the NCERT textbook Curiosity on your own first, then compare with the solutions below.

Answers for questions based on figures follow the figure printed in the book.

Part A: Let us enhance our learning (Textbook Exercise)

1. **The normal temperature of a healthy human being is close to _____.**

   Answer: (ii) 37.0 °C. The normal temperature of a healthy human body is taken to be 37.0 °C (98.6 °F).

2. **37 °C is the same temperature as _____.**

   Answer: (iv) 98.6 °F. A temperature of 37.0 °C on the Celsius scale equals 98.6 °F on the Fahrenheit scale.

3. **Fill in the blanks.**

   (i) The hotness or coldness of a system is determined by its temperature.

   (ii) The temperature of ice-cold water cannot be measured by a clinical thermometer (it is outside its 35 °C–42 °C range).

   (iii) The unit of temperature is degree Celsius.

4. **The range of a laboratory thermometer is usually _____.**

   Answer: (ii) –10 °C to 110 °C.

5. **Four students used a laboratory thermometer to measure the temperature of water as shown in Fig. 7.6. Who followed the correct way?**

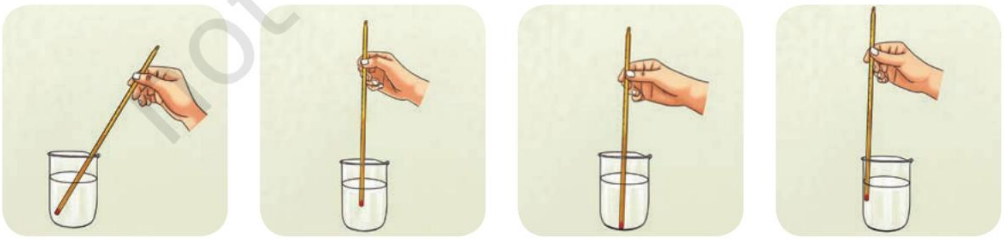

Fig. 7.6

Answer: (ii) Student 2. The thermometer is held vertically with the bulb in the water, not touching the bottom or sides.

Student 1 tilts the thermometer; Student 3's bulb touches the bottom; Student 4's bulb touches the side of the beaker.

6. Colour the red column on the drawings of thermometers (Fig. 7.7) as per the temperatures 14 °C, 17 °C and 7.5 °C.

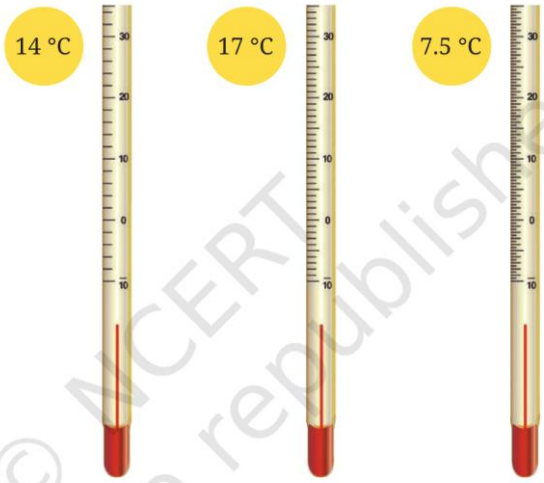

Fig. 7.7

Colour the red column in each thermometer up to the mark of the given temperature:

- First thermometer: colour up to the 14 °C mark.
- Second thermometer: colour up to 17 °C.
- Third thermometer: colour up to 7.5 °C (between 5 °C and 10 °C, at the middle).

Count the small divisions carefully from the nearest numbered mark.

7. Observe the part of the thermometer shown in Fig. 7.8 and answer.



Fig. 7.8

(i) It is a laboratory thermometer (it has a scale from –10 °C and a range extending beyond the clinical range).

(ii) The red column ends between the 20 °C and 30 °C marks, at about 26 °C.

(iii) Ten small divisions lie between two marks 10 °C apart, so the smallest value is 1 °C.

8. A laboratory thermometer is not used to measure our body temperature. Give a reason.

A laboratory thermometer is not made for the human body. Its smallest value is 1 °C, so small changes in body temperature cannot be read, it can break easily, and it has to be read while it is in the liquid (the level falls as soon as it is taken out). A clinical thermometer is made specially for the human body range (35 °C to 42 °C).

9. Vaishnavi's body temperature record (Table 7.4).

Day	7 am	10 am	1 pm	4 pm	7 pm	10 pm
One	38.0 °C	37.8 °C	38.0 °C	38.0 °C	40.0 °C	39.0 °C
Two	38.6 °C	38.8 °C	39.0 °C	39.0 °C	39.0 °C	38.0 °C
Three	37.6 °C	37.4 °C	37.2 °C	37.0 °C	36.8 °C	36.6 °C

(i) The highest recorded temperature was 40.0 °C.

(ii) It was recorded on Day One at 7 pm.

(iii) Her temperature returned to normal (37.0 °C) on Day Three (at 4 pm; it kept falling after that).

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10. To measure 22.5 °C, which of the three thermometers (Fig. 7.9) will you use? Explain.

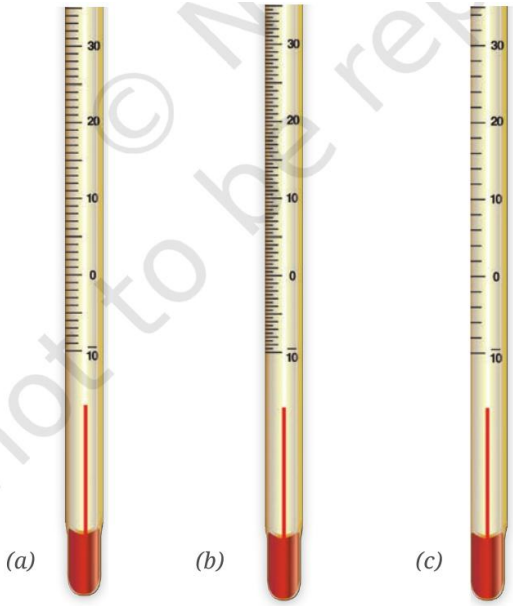


Fig. 7.9: Three thermometers

Answer: thermometer (b). Its smallest division is 0.5 °C, so 22.5 °C can be read exactly. Thermometer (a) reads in 1 °C steps and (c) in 2 °C steps, so they cannot show 22.5 °C exactly.

11. The temperature shown by the thermometer in Fig. 7.10 is _____.

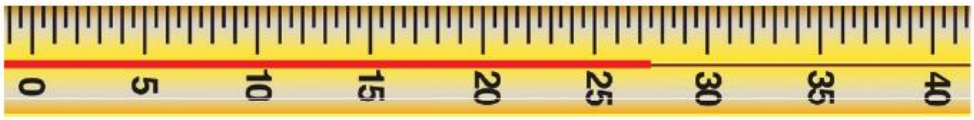


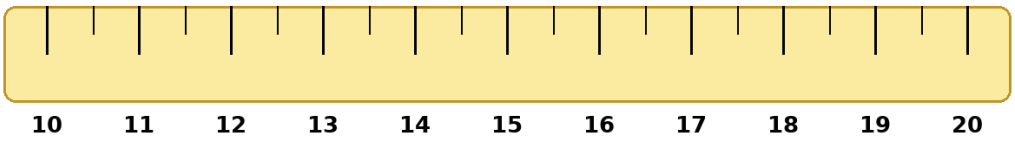
Fig. 7.10

Answer: (ii) 27.5 °C. The scale has divisions of 0.5 °C and the red column stops at 27.5 °C (between 25 °C and 30 °C).

12. A laboratory thermometer has 50 divisions between 0 °C and 100 °C. What does each division measure?

Each division = 100 °C ÷ 50 = 2 °C.

13. Draw the scale of a thermometer in which the smallest division reads 0.5 °C (portion between 10 °C and 20 °C).



Scale between 10 °C and 20 °C – 20 divisions, each division = 0.5 °C

Between 10 °C and 20 °C there are 10 °C ÷ 0.5 °C = 20 divisions. Mark 10 °C, 11 °C, …, 20 °C with longer lines and put one shorter line in the middle of each pair (e.g. at 10.5 °C, 11.5 °C, …).

14. Komal says she has a fever of 101 degrees. Is it Celsius or Fahrenheit?

It is the Fahrenheit scale. A human body temperature cannot be 101 °C (the normal range is 35 °C to 42 °C), whereas 101 °F is about 38.3 °C, which is a fever.

Part B: In-text and Activity Questions

1. **Can it always be correctly judged that a person has fever only by touching?**
   No. Our sense of touch cannot always be relied upon; a thermometer gives a reliable measure.
2. **Activity 7.1: What do the right hand and left hand feel in container B?**
   The right hand (from warm water A) feels B cool; the left hand (from ice-cold water C) feels B warm. So we cannot always rely on touch.
3. **How do we find out how hot or cold a body is?**
   By measuring its temperature with a thermometer.
4. **Do small children generally have slightly higher body temperatures than adults?**
   Yes; body temperature is influenced by age, time of the day and activity level.
5. **Do old people, even when healthy, generally have lower body temperatures than young adults?**
   Yes, generally slightly lower, as body temperature depends on age.
6. **A friend's thermometer shows 98.6 °F. What is the reason for this difference?**
   It reads on the Fahrenheit scale; 98.6 °F = 37.0 °C.
7. **Can a clinical thermometer be used for measuring the temperature of boiling water or ice?**
   No. The temperatures of boiling water and ice are outside the range of a clinical thermometer.
8. **How was fever detected before thermometers were developed?**
   Fever affects the pulse rate, which was known in olden days in India. But other situations also affect pulse rate, so it is not a reliable indicator.
9. **How can we measure temperatures beyond the range of a clinical thermometer?**
   By using a laboratory thermometer.
10. **Which thermometers were used during COVID-19 and why?**
    Non-contact (infrared) thermometers, which measure temperature without touching the body and reduce the spread of disease.
11. **Can we use a laboratory thermometer for measuring body temperature of a person?**
    No (see Q8 above).
12. **Activity 7.3 – What is the range of the thermometer in Fig. 7.3a?**
    –10 °C to 110 °C.
13. **Activity 7.4 – What is the smallest value the thermometer in Fig. 7.3b can read?**
    10 °C ÷ 10 divisions = 1 °C.
14. **Activity 7.5 – Why must we read the temperature while the thermometer is in the water?**
    As soon as it is taken out, the liquid level begins to fall.
15. **Activity 7.6 – Why are boiling-water readings of students different?**
    The correct way of reading the temperature may not have been followed by all the students.
16. **Activity 7.7 – Do maximum and minimum temperature stay the same every day?**
    No. Weather depends on several factors, so they vary every day; they generally rise as summer approaches and fall in winter.

Part C: Keywords to Remember

Air temperature • Celsius scale • Clinical thermometer • degree Celsius • degree Fahrenheit • Fahrenheit scale • kelvin • Kelvin scale • Laboratory thermometer • Precaution • SI unit of temperature • Temperature

Part D: Quick Summary

- Temperature tells us how hot or cold a body is.
- Three scales: Celsius (°C), Fahrenheit (°F) and Kelvin (K); the SI unit is kelvin. K = °C + 273.15.
- A clinical thermometer measures body temperature; normal is 37.0 °C or 98.6 °F.
- Laboratory thermometers typically range from –10 °C to 110 °C.