CBSE CLASS 6 SCIENCE – CHAPTER 7
WORKSHEET SET 3 (CHALLENGING LEVEL)

Class 6 Science | Chapter 7: Temperature and its Measurement | Level: Challenging

Name: _____	Class: 6 Section: _____
Date: _____	

Section A: Multiple Choice Questions

Choose the correct option.

1. A thermometer has 20 divisions between 20 °C and 30 °C. Its smallest value is
(a) 0.1 °C
(b) 0.5 °C
(c) 1 °C
(d) 2 °C

2. The temperature 47 °C on the Kelvin scale is
(a) 47 K
(b) 220.15 K
(c) 320.15 K
(d) 373.15 K

3. 0 °C is equal to
(a) 0 K
(b) 100 K
(c) 273.15 K
(d) 373.15 K

4. A digital thermometer placed in the armpit shows 36.4 °C. The actual body temperature is closest to
(a) 35.4 °C
(b) 36.4 °C
(c) 36.9 °C to 37.4 °C
(d) 38.9 °C

5. On a day, the maximum air temperature was 34.5 °C and the minimum was 22.0 °C. The difference is
(a) 10.5 °C
(b) 12.5 °C
(c) 56.5 °C
(d) 22.0 °C

6. Which of the following is written correctly?
(a) 37.0 °K
(b) 37.0°c
(c) 37.0 °C
(d) 37.0 C°

7. A clinical thermometer cannot measure the temperature of ice mainly because
(a) ice is solid
(b) it is outside the 35 °C to 42 °C range of the thermometer
(c) ice is too heavy
(d) ice has no temperature

8. A thermometer with smallest value 1 °C can read exactly
   (a) 22.5 °C
   (b) 37.2 °C
   (c) 25.0 °C
   (d) 30.4 °C
9. Boiling water readings in Phiban's class ranged from 97.8 °C to 98.1 °C. The most likely reason for the differences is that
   (a) water changed into ice
   (b) the correct way of reading was not followed by all
   (c) thermometers use different units
   (d) water has many temperatures
10. Which statement is NOT correct?
   (a) Temperature of boiling water remains constant while it boils
   (b) Temperature of melting ice rises continuously while it melts
   (c) There is a lower limit to temperature called absolute zero
   (d) Reading must be taken with the thermometer in the liquid

Section B: Fill in the Blanks

Fill in the blanks with the correct word or number.

1. 300 K is equal to _____ °C (use K = °C + 273.15).
2. A thermometer with 25 divisions between 0 °C and 50 °C has a smallest value of _____ °C.
3. 98.6 °F is equal to _____ °C.
4. A hotter body has a _____ temperature than a colder body.
5. The bulb of a laboratory thermometer must not touch the _____ or the sides of the beaker.
6. Absolute zero is close to _____ °C.
7. Before thermometers, fever was detected through its effect on the _____ rate.
8. The temperature at the core of the Sun reaches about 15 _____ degrees Celsius.
9. In "degree Celsius", the word "degree" starts with a _____-case letter.
10. While reading a thermometer, the eye should be in line with the level of the _____ column.

Section C: True or False

Write True or False.

1. On the Kelvin scale, the normal body temperature is 310.15 K. (_____)
2. There is a limit on the highest temperature but no limit on the lowest temperature. (_____)
3. The smallest value is the same for every laboratory thermometer. (_____)
4. After keeping the left hand in ice-cold water, tap water feels warm to that hand. (_____)
5. A full stop is always written after the symbol °C. (_____)
6. A change in pulse rate happens only because of fever. (_____)
7. After the thermometer is taken out of the water, the liquid level begins to fall. (_____)
8. A reading of 45 °C lies outside the normal range of human body temperature. (_____)
9. A broken mercury thermometer poses no risk. (_____)
10. Anna Mani's work helped India reduce dependence on other nations for weather instruments. (_____)

Section D: Match the Following

Match the items in Column A with Column B. Write the letter in the bracket.

No.	Column A	Answer	Column B
1	0 °C	( )	(a) Read the temperature while immersed
2	27 °C	( )	(b) Smallest value 0.5 °C
3	100 °C	( )	(c) 300.15 K
4	50 divisions between 0 °C and 100 °C	( )	(d) 120 °C
5	20 divisions between 10 °C and 20 °C	( )	(e) 273.15 K
6	98.6 °F	( )	(f) Fahrenheit scale
7	Span of –10 °C to 110 °C	( )	(g) Smallest value 2 °C
8	Lowest temperature possible	( )	(h) –273.15 °C
9	Liquid column falls after thermometer is taken out	( )	(i) 373.15 K
10	"Fever of 101 degrees"	( )	(j) 37.0 °C

Section E: Answer in Two Lines

1. Convert 37 °C into kelvin. Show the formula.

2. A thermometer has 50 divisions between 0 °C and 100 °C. Find its smallest value.

3. Why should a laboratory thermometer neither be tilted nor held by the bulb?

4. Explain why the water in container B felt different to the two hands.

5. Why is pulse rate alone not a reliable indicator of fever?

6. Why is the mercury thermometer risky?

7. On a day the maximum was 31 °C and the minimum 19 °C. What is the difference?

8. Why do boiling-water readings in Table 7.2 vary from 97.8 °C to 98.1 °C?

9. Why must the tip of a digital thermometer be washed but the display kept out of water?

10. Why was Anna Mani important for India?

Section F: Short Notes

Write short notes on the following. Write 4 or 5 valid points with examples or a neat diagram.

1. Why we cannot rely on our sense of touch (Activity 7.1)

2. Differences between a clinical thermometer and a laboratory thermometer

3. Finding the range and smallest value of a laboratory thermometer (Activities 7.3 and 7.4)

4. Temperature scales and conversion between them

5. Measuring the temperature of ice and boiling water (More to do)

Section G: Answer in One Word

Read the definition and write the term.

1. The lowest possible temperature, close to –273.15 °C. _____

2. The scale on which 0 is the lowest temperature that can be achieved. _____

3. The average body temperature of a large number of healthy people. _____

4. The thermometer with a long, narrow, sealed glass tube and a bulb. _____

5. The temperature scale on which the normal body temperature is 98.6. _____

6. The thermometer that shows temperature digitally using heat sensors. _____

7. The weather parameter measured at weather stations around the world. _____

8. The scientist known as the "Weather Woman of India". _____

9. The symbol of the unit kelvin. _____

10. The colour given to alcohol in a laboratory thermometer. _____

ANSWER KEY – Worksheet Set 3 (Challenging Level)

Section A: Multiple Choice Answers

No.	Ans.	Correct option
1	b	0.5 °C
2	c	320.15 K
3	c	273.15 K
4	c	36.9 °C to 37.4 °C
5	b	12.5 °C
6	c	37.0 °C
7	b	it is outside the 35 °C to 42 °C range of the thermometer
8	c	25.0 °C
9	b	the correct way of reading was not followed by all
10	b	Temperature of melting ice rises continuously while it melts

Section B: Fill in the Blanks

No.	Answer
1	26.85
2	2
3	37.0
4	higher
5	bottom
6	–273.15
7	pulse
8	million
9	lower
10	liquid

Section C: True or False

No.	Answer	Reason / Correct statement
1	True	37.0 + 273.15 = 310.15 K.
2	False	There is a lower limit (absolute zero) but no highest limit.
3	False	Range and smallest value may differ, so read each thermometer carefully.
4	True	Touch can mislead us.
5	False	Only at the end of a sentence.
6	False	Other situations also affect the pulse rate.
7	True	So read it while it is in the water.
8	True	Normal limits are 35 °C to 42 °C.

No.	Answer	Reason / Correct statement
9	False	Mercury is extremely toxic.
10	True	—

Section D: Match the Following

No.	Column A	Ans.	Column B (correct match)
1	0 °C	e	273.15 K
2	27 °C	c	300.15 K
3	100 °C	i	373.15 K
4	50 divisions between 0 °C and 100 °C	g	Smallest value 2 °C
5	20 divisions between 10 °C and 20 °C	b	Smallest value 0.5 °C
6	98.6 °F	j	37.0 °C
7	Span of –10 °C to 110 °C	d	120 °C
8	Lowest temperature possible	h	–273.15 °C
9	Liquid column falls after thermometer is taken out	a	Read the temperature while immersed
10	"Fever of 101 degrees"	f	Fahrenheit scale

Section E: Answer in Two Lines

1. **Convert 37 °C into kelvin. Show the formula.** K = °C + 273.15 = 37 + 273.15 = 310.15 K.
2. **A thermometer has 50 divisions between 0 °C and 100 °C. Find its smallest value.** 100 °C ÷ 50 = 2 °C per division.
3. **Why should a laboratory thermometer neither be tilted nor held by the bulb?** Tilting gives a wrong reading; holding the bulb warms it with the hand and changes the reading.
4. **Explain why the water in container B felt different to the two hands.** The right hand had been in warm water and the left in ice-cold water; each judged B against its earlier condition, so touch is unreliable.
5. **Why is pulse rate alone not a reliable indicator of fever?** Apart from fever, some other situations also affect the pulse rate.
6. **Why is the mercury thermometer risky?** Mercury is extremely toxic and is difficult to dispose of if the thermometer breaks accidentally.
7. **On a day the maximum was 31 °C and the minimum 19 °C. What is the difference?** 31 °C – 19 °C = 12 °C.
8. **Why do boiling-water readings in Table 7.2 vary from 97.8 °C to 98.1 °C?** The correct way of reading the thermometer may not have been followed by all the students.
9. **Why must the tip of a digital thermometer be washed but the display kept out of water?** Washing prevents the spread of germs; the electronic display can be damaged by water.
10. **Why was Anna Mani important for India?** She built weather instruments so India relied less on other nations, and she explored wind and solar energy.

Section F: Short Notes (Model Answers)

1. Why we cannot rely on our sense of touch



Fig. 7.1: Feeling hotness or coldness of water by dipping hands

- Three containers A, B, C hold warm, tap and ice-cold water.
- The right hand is dipped in A and the left hand in C for 1–2 minutes.
- Both hands are then placed in B (tap water).
- The right hand feels B cool, while the left hand feels B warm.
- Inference: touch cannot always tell correctly whether a body is hot or cold; a thermometer is needed.

2. Clinical thermometer vs laboratory thermometer

- Clinical: measures human body temperature; laboratory: used for many other purposes.
- Clinical range is about 35 °C to 42 °C; laboratory range is usually –10 °C to 110 °C.
- Clinical ones are digital and battery-run; laboratory ones have a glass tube, bulb and liquid.
- The clinical thermometer is placed under the tongue or armpit; the laboratory thermometer is dipped in the liquid and read while immersed.
- Example: clinical – checking fever; laboratory – measuring warm water.

3. Range and smallest value of a laboratory thermometer

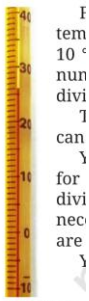


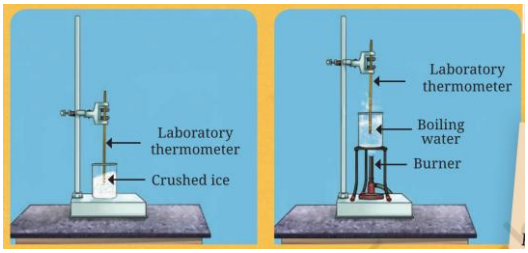
Fig. 7.3(b): Closeup of a part of the thermometer shown in Fig. 7.3a.

- Range = lowest to highest temperature it can measure (–10 °C to 110 °C in Fig. 7.3a).
- Find the temperature difference between two bigger marks (e.g. 10 °C).
- Count the small divisions between them (e.g. 10).
- Smallest value = difference ÷ number of divisions = 10 ÷ 10 = 1 °C.
- Ranges and smallest values differ, so always look carefully before using a thermometer.

4. Temperature scales and conversion

- Celsius (°C), Fahrenheit (°F) and Kelvin (K) are the three scales.
- Normal body temperature: 37.0 °C = 98.6 °F.
- Kelvin = Celsius + 273.15, e.g. 37 °C = 310.15 K.
- The SI unit of temperature is kelvin.
- The Fahrenheit scale is not used in most scientific studies anymore.

5. Temperature of ice and boiling water



- Two setups arranged by the teacher use laboratory thermometers: one in crushed ice, one in boiling water.
- Students observe the readings closely.
- Readings are taken again after some time.
- The temperature of boiling water stays constant while it boils; that of ice stays constant while it melts.
- Caution: do only under the teacher's supervision and never touch the setups.

Section G: Answer in One Word

No.	Answer
1	absolute zero
2	Kelvin scale
3	normal temperature
4	laboratory thermometer
5	Fahrenheit scale
6	digital (clinical) thermometer
7	air temperature
8	Anna Mani
9	K
10	red