

CLASS 6 SCIENCE – CASE STUDY QUESTIONS – SET A**Chapter 5: Measurement of Length and Motion (NCERT Curiosity)**

Name: _____ Class: 6 ____ Date: _____

Read each case study carefully and answer the questions that follow. Each question carries 1 mark.

Case Study 1: Deepa's Uniform [3 marks]

Deepa, an eleven-year-old girl from Haryana, needs a new uniform because she has grown taller. At the cloth shop, the shopkeeper measures a two-metre cloth piece using a metal measuring rod. Then the tailor measures Deepa using a flexible measuring tape. Deepa's mother asks the tailor to increase the length of the uniform by 'char angula'.

1. Why does the tailor use a flexible measuring tape instead of a metal rod?

2. What does 'char angula' mean?

3. Write the length of the cloth (2 m) in centimetres.

Case Study 2: Measuring the Classroom Table [3 marks]

Deepa and her four friends measure the length of their classroom table with their handspans. Anish gets slightly more than 13, Padma gets 13, Tasneem gets slightly less than 13, Deepa gets between 13 and 14, and Hardeep gets 14. The friends are puzzled by the different results.

1. Why did the five friends get different numbers of handspans?

2. In '13 handspans', which part is the number and which is the unit?

3. What should the friends use to get the same result every time?

Case Study 3: Padma's Bus Journey [3 marks]

Padma is travelling by bus to see her grandparents in Delhi. She reads a kilometre stone on the roadside that says 'Delhi 70 km'. After some time, the next stone says 'Delhi 60 km'.

1. What is the reference point in this situation?

2. How far did Padma travel between the two stones?

3. Was Padma in motion with respect to Delhi? Give a reason.

Case Study 4: The Broken Scale [3 marks]

Ravi's 15-cm scale has a broken end and the zero mark is missing. He places the full mark '1.0 cm' at one end of his eraser. The other end of the eraser lines up with the mark 10.4 cm.

1. What is the length of the eraser?

2. Can Ravi still use this scale? Why?

3. Write the length correctly with the unit, following the rules for writing units.

Case Study 5: The Farmer's Strides [3 marks]

A farmer wants to divide his field into beds. He walks along the field and counts his strides. Another farmer measures the same field by counting the lengths of his own feet, and both get different answers.

1. Name the units used by the two farmers.

2. Why do the two farmers get different answers?

3. Which standard unit and tool would give the same answer for both?

ANSWER KEY – SET A

Case Study 1: Deepa's Uniform

1. The body is curved and a rigid rod cannot bend around it. A flexible tape bends and gives a correct measurement.
2. Char angula means the width of four fingers. Angula is an old Indian unit of length.
3. $1\text{ m} = 100\text{ cm}$, so $2\text{ m} = 2 \times 100 = 200\text{ cm}$.

Case Study 2: Measuring the Classroom Table

1. The handspans of different people are of different sizes. So the counts for the same table differ.
2. 13 is the number and 'handspan' is the unit.
3. They should use a standard unit and scale, such as a metre scale marked in centimetres.

Case Study 3: Padma's Bus Journey

1. Delhi is the reference point.
2. $70\text{ km} - 60\text{ km} = 10\text{ km}$.
3. Yes. Her distance from Delhi changed with time, so her position changed with respect to the reference point.

Case Study 4: The Broken Scale

1. $10.4\text{ cm} - 1.0\text{ cm} = 9.4\text{ cm}$.
2. Yes. He can start from any full mark and subtract that reading from the reading at the other end.
3. 9.4 cm. It is in lowercase, has a space between the number and the unit, and has no 's' or full stop after the symbol.

Case Study 5: The Farmer's Strides

1. One farmer used strides and the other used foot length.
2. The length of a stride or foot differs from person to person, so these are not standard units.
3. The metre (SI unit) with a measuring tape gives the same answer for everyone.

CLASS 6 SCIENCE – CASE STUDY QUESTIONS – SET B**Chapter 5: Measurement of Length and Motion (NCERT Curiosity)**

Name: _____ Class: 6 ____ Date: _____

Read each case study carefully and answer the questions that follow. Each question carries 1 mark.

Case Study 1: Passengers in the Bus [3 marks]

Deepa looks around in the bus and finds that all the passengers are seated and not changing their positions. She thinks they are at rest. Then she looks out of the window and sees that the passengers are changing positions with respect to the buildings outside.

1. With respect to the bus, are the seated passengers at rest or in motion?

2. With respect to a building outside, are the passengers at rest or in motion?

3. What does this tell us about a reference point?

Case Study 2: The Kabaddi Court [3 marks]

For sports day, Hardeep and his friends help the sports teacher to draw a kabaddi court on the playground with chuna (limestone) powder. Padma brings a long measuring tape from the sports room. Deepa first decides a point on the ground from which all distances will be measured.

1. What is the point chosen by Deepa called?

2. Why is a long measuring tape used instead of a 15-cm scale?

3. A kabaddi court is 13 m long. Express this in centimetres.

Case Study 3: String Lights on the Arch [3 marks]

Anish and his parents want to fix electric string lights along the curved arches of their verandah for a celebration. They need to know how long a string of lights they must buy.

1. Which tools can be used to measure the length of the curved arch?

2. Describe how a thread is used to measure a curved line.

3. The thread measured 4.2 m. Express this in centimetres.

Case Study 4: A Day at the Children's Park [3 marks]

Riya visits a children's park. She sees a child moving on a swing, another child sitting on a merry-go-round, and a third child sliding straight down a slide.

1. What type of motion is shown by the swing?

2. What type of motion is shown by the merry-go-round?

3. Name the motion of the child sliding straight down.

Case Study 5: Measurement in Ancient India [3 marks]

India has a long history of measurement. Units like angula, dhanusa and yojana are mentioned in ancient books and were used for artefacts, architecture and town planning. Objects with ruled markings, which could be scales, have been dug up from Harappan sites. Carpenters and tailors still use the angula today.

1. Name two ancient Indian units of length.

2. Who still uses the angula today?

3. What was excavated from Harappan Civilisation sites that shows early measurement?

ANSWER KEY – SET B

Case Study 1: Passengers in the Bus

1. They are at rest, because their position does not change with respect to the bus.
2. They are in motion, because their position changes with respect to the building.
3. Whether an object is at rest or in motion depends on the reference point chosen.

Case Study 2: The Kabaddi Court

1. It is called the reference point.
2. The court is a large area, and a 15-cm scale is too short for it.
3. $13 \times 100 = 1300$ cm.

Case Study 3: String Lights on the Arch

1. A flexible measuring tape or a thread can be used.
2. Place the thread along the curve. Then straighten it and measure its length with a metre scale.
3. $4.2 \times 100 = 420$ cm.

Case Study 4: A Day at the Children's Park

1. Oscillatory motion, because it moves to and fro about a fixed position.
2. Circular motion, because it moves along a circular path.
3. Linear motion, since the child moves along a straight line.

Case Study 5: Measurement in Ancient India

1. Angula and dhanusa (yojana is also correct).
2. Traditional craftspeople such as carpenters and tailors.
3. Objects with ruled markings that could be scales.

CLASS 6 SCIENCE – CASE STUDY QUESTIONS – SET C**Chapter 5: Measurement of Length and Motion (NCERT Curiosity)**

Name: _____ Class: 6 ____ Date: _____

Read each case study carefully and answer the questions that follow. Each question carries 1 mark.

Case Study 1: Tasneem's Metre Scale [3 marks]

Tasneem wants to make a metre scale by herself. She has plywood, paper, cloth, stretchable rubber and steel. She has to decide which material is suitable.

1. Which material should she NOT use for the scale?

2. Why is that material unsuitable?

3. Name one material that is suitable for a metre scale.

Case Study 2: Riya's Pencil [3 marks]

Riya measures her pencil with a 15-cm scale and finds it is 14.5 cm long. In her notebook she writes '14.5 Cms.' and then '14.5cm' in another place.

1. What mistakes did Riya make in writing the length?

2. Write the correct form.

3. Express her measurement in millimetres.

Case Study 3: Rohan's Way to School [3 marks]

The distance between Rohan's home and school is 1.5 km. He walks to school every day. He wants to tell this distance in metres to his friend.

1. Express 1.5 km in metres.

2. Which unit is suitable for the distance between home and school: mm, cm or km? Why?

3. Rohan walks 750 m and takes a rest. How much of the way is left?

Case Study 4: Eraser on a Thread [3 marks]

Meena ties an eraser to one end of a thread and holds the other end. She pulls the eraser slightly to one side and releases it. The eraser moves to and fro again and again.

1. What is the name of this motion?

2. Is this motion periodic? Why?

3. Give one more example of oscillatory motion.

Case Study 5: Measuring Distance with a Bicycle [3 marks]

A fun method to measure distance uses a bicycle. A flexible strip is attached to the front wheel so that it hits the frame and makes a sound once every turn. Sunil rides slowly and hears the sound 300 times. He measures the outer boundary of the wheel with a string and finds it to be 2 m.

1. How many turns did the wheel make?

2. Find the distance travelled in metres.

3. Express the distance in kilometres.

ANSWER KEY – SET C

Case Study 1: Tasneem's Metre Scale

1. Stretchable rubber (paper and cloth are also unsuitable for a rigid scale).
2. Rubber stretches, so the markings would change and the readings would be wrong.
3. Steel or plywood, because they keep their length and do not stretch.

Case Study 2: Riya's Pencil

1. She wrote 'Cms' (a capital letter and an 's'), and she left no space in '14.5cm'.
2. 14.5 cm.
3. $1\text{ cm} = 10\text{ mm}$, so $14.5\text{ cm} = 145\text{ mm}$.

Case Study 3: Rohan's Way to School

1. $1\text{ km} = 1000\text{ m}$, so $1.5\text{ km} = 1500\text{ m}$.
2. Kilometre, since the distance is large.
3. $1500\text{ m} - 750\text{ m} = 750\text{ m}$.

Case Study 4: Eraser on a Thread

1. Oscillatory motion.
2. Yes, because the eraser repeats its motion after a fixed interval of time.
3. A swing, or a vibrating metal strip.

Case Study 5: Measuring Distance with a Bicycle

1. 300 turns, one sound for each turn.
2. Distance = $300 \times 2\text{ m} = 600\text{ m}$.
3. $600\text{ m} \div 1000 = 0.6\text{ km}$.