

STD 6 SCIENCE

COMPLETE STUDY GUIDE

Curiosity — All 12 Chapters, with Mind Maps and Diagrams

- ★ Interesting Facts to open every chapter
- ★ Detailed Concept Notes for every topic
- ★ A colour Mind Map for every chapter
- ★ Quick Glossary and Study Tips
- ★ 1,332 questions — every one fully solved

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CHAPTER

1

The Wonderful World of Science

Interesting Facts • Concept Notes • Mind Map • Model Answers

AlphaLearn Studylab

Curiosity | CBSE / NCERT | Class 6 Science

Chapter 1: The Wonderful World of Science

Class 6 Science (Curiosity) — Complete Study Guide

DID YOU KNOW? — INTERESTING FACTS

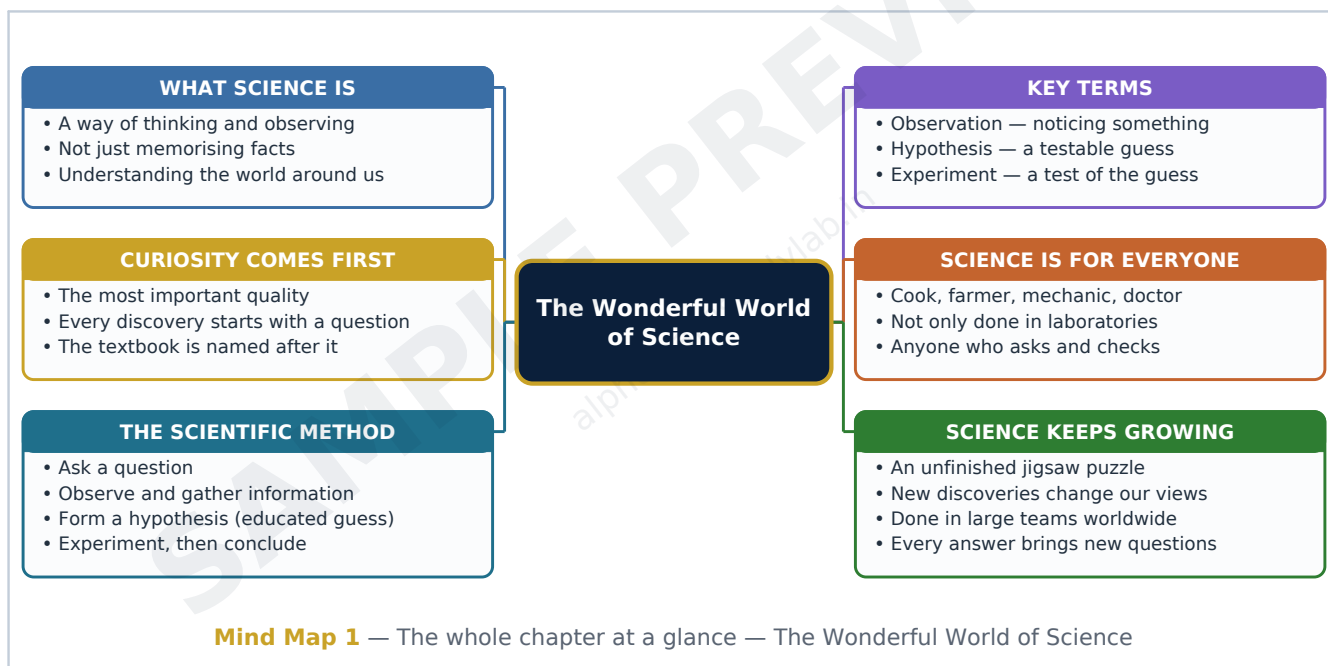
- ✦ Your Class 6 Science textbook is called 'Curiosity' — and that is no accident. The book is named after the single quality that starts every scientific discovery.
- ✦ Science is never 'finished'. It is often compared to a jigsaw puzzle that is still being put together — every new discovery adds a piece and often reveals more missing ones.
- ✦ A wrong guess is not a failure in science. When an experiment does not support a hypothesis, the scientist simply makes another guess and tests again. That is how progress actually happens.
- ✦ Some of the biggest scientific breakthroughs began with an ordinary question. Newton asked why an apple falls downwards; the answer became the law of gravitation.
- ✦ Science is rarely done alone. Most modern discoveries come from large teams working across many countries — the more difficult the problem, the bigger the team.
- ✦ You do not need a laboratory to do science. A cycle repairer dipping a tube in water to find where the air leaks is following exactly the same method a research scientist uses.
- ✦ The more scientists discover, the more questions appear. Every answer opens up new things to find out — which is why science never runs out of work.

CONCEPT NOTES

- **WHAT SCIENCE IS:** Science is not a pile of facts to be memorised. It is a **WAY OF THINKING, OBSERVING AND DOING THINGS** in order to understand the world around us.
- **CURIOSITY IS THE STARTING POINT:** the first and most important quality needed to learn science is curiosity — the urge to ask 'why?' and 'how?'. Every investigation begins with a question that someone cared enough to ask.
- **SCIENCE IS FOR EVERYONE:** scientists are not only people in white coats. A cook, a farmer, a mechanic and a doctor all observe, guess, test and decide. Anyone who asks a question and checks the answer carefully is thinking scientifically.
- **THE SCIENTIFIC METHOD** is the step-by-step process scientists follow to find answers. It gives a reliable way to move from a question to a trustworthy conclusion.
- **STEP 1 — ASK A QUESTION:** curiosity produces a question. This is always the first step, and without it nothing else follows.
- **STEP 2 — OBSERVE:** look closely, gather information and notice details. An **OBSERVATION** is noticing something interesting that we want to understand.
- **STEP 3 — FORM A HYPOTHESIS:** a **HYPOTHESIS** is an educated guess about the answer. It is not a wild guess — it is based on what has already been observed, and it must be testable.
- **STEP 4 — EXPERIMENT:** an **EXPERIMENT** is a test carried out to check whether the hypothesis is correct. A good experiment changes one thing at a time so the result can be trusted.
- **STEP 5 — DRAW A CONCLUSION:** examine the results and decide whether they support the hypothesis. If they do not, the scientist makes **ANOTHER** hypothesis and tests again — this is normal, not a failure.
- **THE METHOD IS A CYCLE, NOT A LINE:** a conclusion usually raises a new question, and the whole process begins again. This is why the supply of scientific questions never runs out.

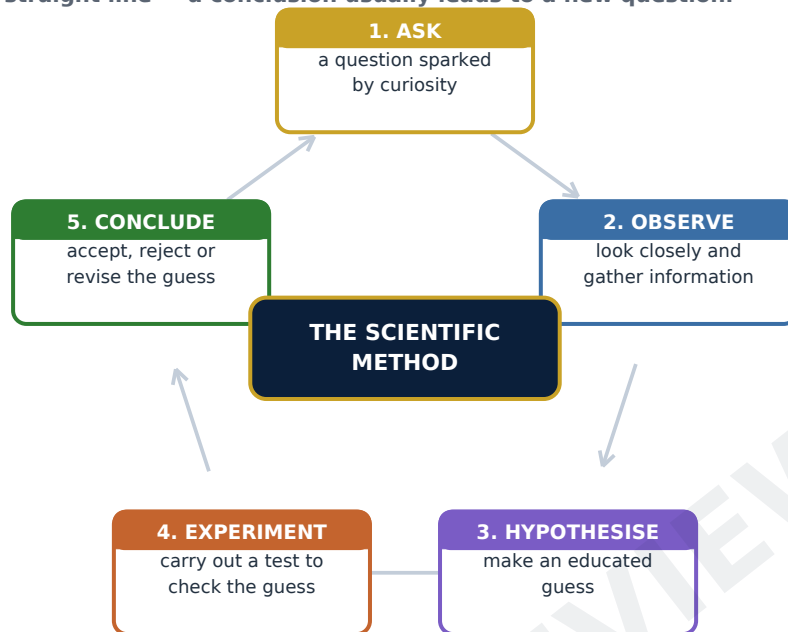
- **SCIENCE KEEPS CHANGING:** a new discovery can change our understanding of the world, so scientific knowledge is updated as fresh evidence appears. Being willing to change your view is a scientific strength, not a weakness.
- **SCIENCE AS AN UNFINISHED PUZZLE:** the chapter compares science to a jigsaw puzzle still being assembled. Each discovery is a piece; the picture is never complete.
- **SCIENCE IS COLLABORATIVE:** modern science is done in large teams, often across many countries. Sharing knowledge, skills and equipment lets scientists solve problems too big for any one person.
- **THE BRANCHES OF SCIENCE:** physics studies motion, force, light, sound and magnets; chemistry studies materials and how substances change; biology studies living things; earth and space science studies weather, rocks, water and the sky. They are different windows on the same world.
- **QUALITIES OF A GOOD SCIENCE STUDENT:** curiosity, careful observation, patience after failure, honesty in reporting results, willingness to work in a team, and an open mind that changes with new evidence.
- **WHAT SCIENCE IS NOT:** choosing a favourite colour is not a scientific question, because there is no observation or experiment that can test it. Scientific questions must be answerable by evidence.

CHAPTER MIND MAP



VISUAL CONCEPTS

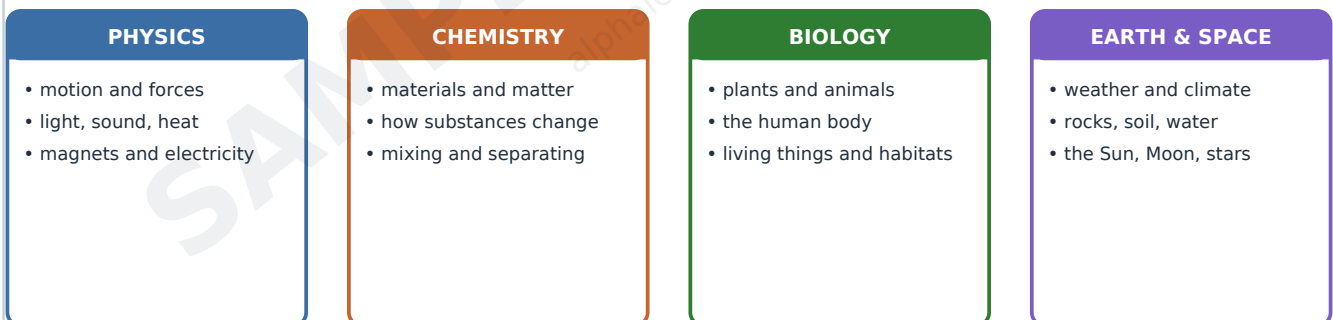
It is a **CYCLE**, not a straight line — a conclusion usually leads to a new question.



If the experiment does not support the hypothesis, a scientist makes another guess and tests again.

Figure 1.1 — The scientific method — a repeating cycle, not a straight line

SCIENCE IS ONE SUBJECT WITH MANY BRANCHES



In Class 6 you will meet all four — the chapter calls them different windows on the same world.

Figure 1.2 — The main branches of science

EVERYDAY SCIENTISTS — science is not only done in laboratories

1

A cook

adjusts the flame when the milk starts to rise

2

A farmer

watches the clouds before deciding when to sow

3

A cycle repairer

dips the tube in water to find where air leaks

4

A doctor

asks questions, then tests before deciding a cause

Each one **OBSERVES**, **GUESSES** a reason, **TESTS** it and **DECIDES** — the scientific method in daily life.

Anyone who asks 'why?' and then checks the answer carefully is thinking like a scientist.

Figure 1.3 — Everyday scientists — the method outside the laboratory

QUALITIES THAT HELP YOU LEARN SCIENCE

CURIOSITY

wanting to know why



OBSERVATION

noticing carefully

PATIENCE

trying again after failure

HONESTY

reporting what really happened

TEAMWORK

science is rarely done alone

OPEN MIND

changing your view with new evidence

★ **CURIOSITY comes first** — it is the quality that starts every scientific journey.

Figure 1.4 — The qualities that help you learn science

QUICK GLOSSARY

Science — A way of thinking, observing and doing things to understand the world.

Curiosity — The desire to know why and how things happen; the starting point of science.

Scientific method — The step-by-step process used to answer a scientific question.

Observation — Noticing something interesting that we want to understand.

Hypothesis — An educated, testable guess about the answer to a question.

Experiment — A test carried out to check whether a hypothesis is correct.

Conclusion — The decision reached after examining the results of an experiment.

Evidence — Information gathered from observation or experiment that supports a conclusion.

Curiosity (the textbook) — The name of the NCERT Class 6 Science textbook.

STUDY TIPS & EXAM TRICKS

- ★ Learn the definition of Science exactly as the chapter gives it — 'a way of thinking, observing and doing things to understand the world'. 'Memorising facts' is always the wrong option.
- ★ Memorise the five steps of the scientific method IN ORDER: ask, observe, hypothesise, experiment, conclude. Order questions are extremely common.
- ★ Keep the three key terms distinct: an OBSERVATION is what you notice, a HYPOTHESIS is your educated guess, and an EXPERIMENT is the test of that guess. Mixing these up costs the most marks in this chapter.
- ★ A hypothesis is an EDUCATED guess, not a wild one, and it must be testable. Say 'educated' and 'testable' in your definition.
- ★ If an experiment does not support the hypothesis, the correct response is to make ANOTHER hypothesis and test again — never to abandon the question or change the results.
- ★ For 'which is NOT a scientific question' items, look for anything about personal preference, such as choosing a favourite colour. Preferences cannot be tested by experiment.
- ★ Remember the two images the chapter uses: science as an UNFINISHED JIGSAW PUZZLE, and science as TEAMWORK. Both appear in assertion-reason and value-based questions.
- ★ In Assertion-Reason questions, check three things separately: is A true, is R true, and does R actually EXPLAIN A? Many students get the first two right and forget the third.
- ★ For case-based questions, read the passage twice before looking at the options. The answer is almost always stated or implied directly in the passage.

MODEL ANSWER SHEET

How to answer every question in this chapter — each one written out the way an examiner expects to see it

Section A — Objective Questions (Multiple Choice)

Q1. The title of the Class 6 Science textbook is _____.

- (a) Curiosity
- (b) Discovery
- (c) Wonder
- (d) Inquiry

Answer: (a) Curiosity

Q2. Which of the following best describes Science?

- (a) Memorising facts
- (b) A way of thinking, observing and doing things to understand the world
- (c) Reading books written by scientists
- (d) Collecting specimens from nature

Answer: (b) A way of thinking, observing and doing things to understand the world

Q3. The first and most important quality needed to learn Science well is _____.

- (a) Memory
- (b) Speed
- (c) Curiosity
- (d) Strength

Answer: (c) Curiosity

Q4. Which of the following is NOT an example of science being present in daily life?

- (a) Cooking food in the kitchen
- (b) Playing on a playground
- (c) Wondering why stars shine
- (d) Choosing a favourite colour

Answer: (d) Choosing a favourite colour

Q5. Science is compared in the chapter to _____.

- (a) A river
- (b) A jigsaw puzzle
- (c) A map
- (d) A library

Answer: (b) A jigsaw puzzle

Q6. The pen-stopped-writing example in the chapter illustrates which concept?

- (a) The importance of reading
- (b) The scientific method
- (c) Observing nature
- (d) Teamwork in science

Answer: (b) The scientific method

Q7. When a scientist's guess turns out to be wrong, the NEXT step is to _____.

- (a) Stop the experiment
- (b) Make another guess and test it
- (c) Accept the wrong result
- (d) Ask someone else to solve it

Answer: (b) Make another guess and test it

Q8. Which of the following is an example of someone using the scientific method in daily life?

- (a) A painter mixing colours
- (b) A bicycle repair person finding where air leaks from a tyre
- (c) A student reading a textbook
- (d) A chef tasting food

Answer: (b) A bicycle repair person finding where air leaks from a tyre

Q9. Scientists across the world usually work _____.

- (a) Alone in secrecy
- (b) In large teams and together
- (c) Only in laboratories
- (d) Only at night

Answer: (b) In large teams and together

Q10. According to the chapter, every new discovery in science leads to _____.

- (a) Final answers
- (b) More questions and more things to find out
- (c) End of exploration
- (d) Fewer mysteries

Answer: (b) More questions and more things to find out

Q11. Which step of the scientific method did Riya begin with?

- (a) Making a hypothesis
- (b) Conducting an experiment
- (c) Making an observation
- (d) Analysing results

Answer: (c) Making an observation

Q12. What did Riya do when she covered the window with black paper?

- (a) Made an observation
- (b) Analysed results
- (c) Performed an experiment to test her guess
- (d) Drew a conclusion

Answer: (c) Performed an experiment to test her guess

Q13. Riya's guess that 'the plant moves towards sunlight' is best called a _____.

- (a) Theory
- (b) Hypothesis
- (c) Fact
- (d) Proof

Answer: (b) Hypothesis

Q14. If the plant stopped bending after covering the window, what should Riya conclude?

- (a) Her hypothesis was wrong
- (b) Her hypothesis may be correct
- (c) Sunlight has no effect on plants
- (d) The experiment was not needed

Answer: (b) Her hypothesis may be correct

Q15. Which value does Riya's behaviour best demonstrate?

- (a) Memorisation
- (b) Curiosity and inquiry
- (c) Speed
- (d) Teamwork

Answer: (b) Curiosity and inquiry

Q16. Which of these daily activities uses the scientific method?

- (a) Colouring a picture
- (b) Guessing why a light switch doesn't work and testing it
- (c) Singing a song
- (d) Reading a storybook

Answer: (b)

Q17. Which of the following best describes a hypothesis?

- (a) A proven fact
- (b) A random guess
- (c) An educated guess that can be tested
- (d) An experiment result

Answer: (c)

Q18. The chapter says that to be a wise person, you must be a _____.

- (a) Whys person
- (b) Fast person
- (c) Silent person
- (d) Careful person

Answer: (a)

Q19. Which of these is the correct sequence of the scientific method?

- (a) Experiment → Observe → Guess → Analyse
- (b) Observe → Question → Hypothesis → Experiment → Analyse
- (c) Guess → Observe → Question → Experiment
- (d) Analyse → Observe → Guess → Experiment

Answer: (b)

Q20. Science is compared to a jigsaw puzzle because _____.

- (a) It has a fixed number of pieces
- (b) It can be completed in a day
- (c) Every discovery adds a piece and leads to more questions
- (d) It is a game

Answer: (c)

Q21. According to the chapter, scientists usually work _____.

- (a) Alone
- (b) In secret
- (c) In large teams
- (d) Only in one country

Answer: (c)

Q22. Which of the following questions is a SCIENTIFIC question?

- (a) Which colour is most beautiful?
- (b) Why do leaves turn yellow in autumn?
- (c) What is the most popular food?
- (d) Who is the best singer?

Answer: (b)

Q23. The chapter says the world is full of things that are _____.

- (a) Already explained
- (b) Waiting to be explored
- (c) Too difficult to understand
- (d) Only for professionals

Answer: (b)

Q24. Which of these is NOT a step in the scientific method?

- (a) Observe
- (b) Memorise
- (c) Hypothesize
- (d) Analyse

Answer: (b)

Q25. According to Chapter 1, the most important quality to begin learning science is _____.

- (a) Intelligence
- (b) Curiosity
- (c) Speed
- (d) Memory

Answer: (b)

Section B — Fill in the Blanks

Q1. Science helps us _____ the secrets of the universe.

Answer: understand/uncover

Q2. The book 'Curiosity' gets its name from the quality of _____.

Answer: curiosity

Q3. New discoveries often _____ our understanding of the world.

Answer: change/update

Q4. When we make a guess about the answer to a question, we are forming a _____.

Answer: hypothesis

Q5. We test our guess through _____ or more observations.

Answer: experiments

Q6. A cook wondering why the dal spilled out of the cooker is following the _____ method.

Answer: scientific

Q7. Earth is the only planet we know that supports _____.

Answer: life

Q8. Every new piece of knowledge in science leads to more _____.

Answer: questions

Q9. The step that comes just after making a guess is to _____ the guess.

Answer: test

Q10. Science is rarely done alone; scientists often work in large _____ .

Answer: teams

Section C — True or False

Q1. Science is only about doing experiments in a laboratory. (True / False)

Answer: False

Q2. The most wonderful thing about science is that it is everywhere. (True / False)

Answer: True

Q3. A new discovery can sometimes change our earlier understanding of the world.(True / False)

Answer: True

Q4. Learning science means memorising as many facts as possible. (True / False)

Answer: False

Q5. Only professional scientists can follow the scientific method. (True / False)

Answer: False

Q6. In the scientific method, we first observe, then wonder, then guess. (True / False)

Answer: True

Q7. According to the chapter, all questions in Grade 6 will be answered. (True / False)

Answer: False

Q8. Planet Earth is the only planet known to support life. (True / False)

Answer: True

Q9. A wise person is also described as a 'whys' person in the chapter. (True / False)

Answer: True

Q10. An electrician checking why a bulb is not working follows the scientific method.(True / False)

Answer: True

Section D — Match the Following

Column A	Column B	Answer
A. Scientific method	P. The question that triggers our curiosity	R
B. Hypothesis	Q. A test carried out to check a hypothesis	S

Column A	Column B	Answer
C. Observation	R. A way to understand the world through observation and thinking	T
D. Curiosity	S. An educated guess about an answer	P
E. Experiment	T. Noticing something interesting that we want to understand	Q

Section E — One-Word Answers

Q1. What is the name of the Class 6 Science textbook? Answer: _____

Answer: Curiosity

Q2. What is the very first step of the scientific method according to the chapter? Answer: _____

Answer: Observe (make an observation)

Q3. Name ONE quality that every scientist – professional or everyday – must have. Answer: _____

Answer: Curiosity

Q4. What do we call the step-by-step approach scientists use to find answers? Answer: _____

Answer: Scientific method

Q5. What is the only planet known to us that supports life? Answer: _____

Answer: Earth

Section F — Very Short Answer Questions

Q1. What does the word 'Curiosity' mean in the context of this chapter?

Answer: Curiosity means having a strong desire to ask questions and understand the world around us.

Q2. Give ONE example from the chapter showing that science is found in everyday life.

Answer: Example: cooking food in the kitchen involves science, such as heat changing the texture of food.

Q3. What do scientists do when their hypothesis turns out to be wrong?

Answer: They form a new guess (hypothesis) and test it again.

Q4. Why does the chapter compare science to an unending jigsaw puzzle?

Answer: Because every discovery adds a piece to the puzzle, but also raises new questions — so it is never fully complete.

Q5. Mention any TWO topics that Chapter 1 says the textbook will explore.

Answer: Any two reasonable topics the textbook covers, e.g., living things and materials around us.

Q6. Name the book and the grade level for which it is written.

Answer: 'Curiosity', written for Class 6 / Grade

Q7. What quality does the chapter say is 'first and foremost' for learning science?

Answer: Curiosity.

Q8. Who are scientists, according to the chapter?

Answer: Anyone who observes, questions and tries to find answers — not only trained professionals.

Q9. Write the five steps of the scientific method in the correct order.

Answer: Observe → Question → Hypothesis → Experiment → Analyse.

Q10. What does the phrase 'to be a wise person, you must be a whys person' mean?

Answer: It means asking 'why' and staying curious is what makes a person truly wise.

Section G — Short Answer Questions

Q1. How does the pen-stopped-writing example help explain the scientific method? Give the steps from the example.

Answer: Observe (pen stops writing) → Question (why?) → Hypothesis (ink finished/tip blocked) → Experiment (shake pen or try new paper) → Analyse (check if it writes again).

Q2. Why does the chapter say that science is not just about memorising facts?

Answer: Because science is about thinking, observing and testing ideas — not simply remembering facts.

Q3. How is a bicycle repair person similar to a scientist? Explain using the scientific method.

Answer: Both notice a problem, guess a possible cause, test the guess (e.g., checking the valve), and confirm the fix — exactly like the scientific method.

Q4. Explain in your own words why the chapter says science is 'like a giant and unending jigsaw puzzle'.

Answer: Because each discovery is like fitting one more piece into an enormous puzzle that keeps growing bigger with new questions.

Q5. The chapter says science is 'everywhere'. Give THREE examples from the chapter that support this statement.

Answer: Any three: cooking, playground activities, wondering why stars shine, bicycle repair, an electrician checking a bulb.

Q6. What is a hypothesis? How is it different from an observation?

Answer: A hypothesis is an educated guess about the answer to a question; an observation is simply noticing something interesting, without yet explaining it.

Q7. Why is teamwork important in science? What does the chapter say about scientists working together?

Answer: Teamwork lets scientists share ideas and skills, helping solve bigger problems faster and more reliably than working alone.

Q8. Give TWO examples from the chapter of living things changing over time, and explain why they are scientifically interesting.

Answer: Accept any two reasonable examples of living things changing over time, with a brief scientific reason.

Q9. What do we mean when we say new discoveries can 'move a piece of the jigsaw puzzle'?

Answer: It means a new discovery can correct or add to what we already believed to be true.

Q10. How can learning science help you solve bigger problems in everyday life?

Answer: By using the scientific method — observing, questioning, guessing and testing — to solve everyday problems more effectively.

Q11. Give TWO examples from the chapter that show science is present in our everyday life.

Answer: Any two: cooking, playground play, bicycle repair, electrician checking a bulb.

Q12. What happens when a hypothesis is proved wrong? What does a scientist do next?

Answer: The scientist forms a new hypothesis and tests it again.

Q13. Why does the chapter say it is important to protect Earth's environment?

Answer: Because Earth is the only known planet that supports life, and protecting it preserves that diversity.

Q14. Explain the difference between 'observation' and 'hypothesis' using one example.

Answer: Observation is simply noticing something (e.g., a plant bending); a hypothesis is guessing why it happens (e.g., towards sunlight).

Q15. Why is teamwork important in scientific discovery? Refer to the chapter.

Answer: Teamwork combines different ideas and skills, helping scientists reach better discoveries faster.

Q16. A girl sees that her cactus plant is not growing. Write the steps she might follow using the scientific method.

Answer: Observe the plant not growing → guess a reason (e.g., not enough water or light) → test by adjusting water/light → observe the result.

Q17. What does the chapter mean when it says 'science is everywhere'? Give any three examples.

Answer: Any three: cooking, playground activities, wondering why stars shine.

Q18. How is the electrician checking a bulb similar to a scientist? Explain.

Answer: Both notice a problem, guess the cause, test the guess, and fix the issue based on the result.

Section H — Long Answer Questions

Q1. Describe the scientific method in detail using the pen-stopped-writing example from the chapter. What are the five steps, and how does each step appear in the example?

Answer: Steps: Observe (pen stops writing) → Question (why?) → Hypothesis (ink finished or tip blocked) → Experiment (shake the pen or try new paper) → Analyse (check if it writes; if not, form a new guess).

Q2. The chapter says science is like a giant, unending jigsaw puzzle. Explain this comparison fully. What happens when a piece of the puzzle is placed in the wrong spot?

Answer: Science is like a puzzle with countless pieces; each discovery is a new piece being placed. Sometimes new evidence shows an earlier piece was placed wrongly, so it gets corrected — the full picture is never truly finished.

Q3. Why do you think the textbook is called 'Curiosity'? How does curiosity connect to all the chapters and topics the book says it will cover? Write your answer in at least 8 sentences.

Answer: Sample answer: The book is named 'Curiosity' because curiosity is the starting point for all scientific questions. Every chapter is designed to spark curiosity about topics such as living things, materials, and the universe. Curiosity leads to observation, which leads to questioning and testing ideas. Without curiosity, we would never notice the small wonders around us. Each chapter builds on this spirit of asking 'why' and 'how'. This habit of questioning helps students think like scientists in daily life. It also connects science to real-world problem solving. Overall, curiosity is the thread that ties the whole book together.

Section I — Assertion-Reason Questions

Instructions: For each question, read the Assertion (A) and the Reason (R) carefully, then select the correct option from: (a) Both A and R are true, and R is the correct explanation of A. (b) Both A and R are true, but R is NOT the correct explanation of A. (c) A is true, but R is false. (d) A is false, but R is true.

Q1. Assertion (A): Science is described as a way of thinking, observing and doing things. Reason (R): Scientists follow a step-by-step process to find answers to their questions. Your answer: _____

Answer: (a)

Q2. Assertion (A): A new discovery can change our understanding of the world. Reason (R): Science is like a finished puzzle where every piece is already in place. Your answer: _____

Answer: (c) [A is true; R is false — science is never a 'finished' puzzle]

Q3. Assertion (A): Curiosity is the starting point of all scientific inquiry. Reason (R): Being curious makes us ask questions, which is the first step in the scientific method. Your answer: _____

Answer: (a)

Q4. Assertion (A): Science is found only in laboratories. Reason (R): The chapter says that some of the most groundbreaking discoveries have come from unexpected places. Your answer: _____

Answer: (d) [A is false — science is everywhere, not only in labs; R is true]

Q5. Assertion (A): When a cook wonders why dal spilled out of the cooker, they are applying the scientific method. Reason (R): Anyone who asks questions and tries to find answers is working like a scientist. Your answer: _____

Answer: (a)

Section J — Case-Based and Source-Based Questions

Read the passage carefully and answer the questions that follow: Meena lives near a pond. One day she noticed that the fish in the pond were floating near the surface and seemed to be gasping. She wondered if the oxygen level in the water had dropped. She had read that too many water hyacinth plants can reduce oxygen in water. She collected water samples from two spots — one with many hyacinth plants and one with fewer — and tested the oxygen content. She found that the area with more hyacinths had less oxygen. She wrote her findings and shared them with her science teacher, who praised her for thinking like a true scientist.

Q1. What was Meena's initial observation?

Answer: The fish were floating near the surface and gasping.

Q2. What was Meena's hypothesis?

Answer: That oxygen levels had dropped because of too many water hyacinth plants.

Q3. How did Meena test her hypothesis?

Answer: She compared water samples from an area with more hyacinths and an area with fewer, and tested the oxygen content of each.

Q4. What did Meena's results show?

Answer: The area with more hyacinths had less oxygen.

Q5. Which step of the scientific method did Meena follow after collecting results?

Answer: Analysing the results and drawing a conclusion.

Q6. Name the step in the scientific method that Meena used when she noticed the fish gasping.

Answer: Observation.

Q7. Do you think Meena followed the correct sequence of the scientific method? Give a reason.

Answer: Yes — she followed the correct sequence: observed, formed a hypothesis, tested it, and analysed the results.

Q8. Name any TWO topics from Chapter 1 that connect to Meena's investigation.

Answer: Any two: the scientific method, curiosity, teamwork (sharing findings with her teacher).

Q9. What does Meena's work show about who can be a scientist?

Answer: It shows that anyone who is curious and follows the scientific method — not just professional scientists — can act like a true scientist.

Q10. How could Meena improve her investigation to make the results more reliable?

Answer: She could test more locations/samples, or repeat the test, to make her results more reliable.

Section K — Competency-Based Questions

Q1. A student spills water on a book and notices that some pages stick together while others don't. Using the scientific method, describe the steps this student could follow to find out why.

Answer: Observe the stuck pages → question why → hypothesize (water made the pages sticky) → test by wetting another page similarly and observing → analyse the result.

Q2. Your friend says, 'Science is only useful in labs and for inventions.' Using ideas from the chapter, write THREE points to convince your friend that science is useful in everyday life.

Answer: Three points: (i) cooking uses science every day, (ii) fixing gadgets at home uses scientific thinking, (iii) understanding weather and plants is science in daily life.

Q3. Imagine you are planning a science investigation to find out which material — cotton, plastic, or metal — stays cool the longest. Identify the steps of the scientific method you would use.

Answer: Observe temperature differences → question which material cools slowest → hypothesize (e.g., metal cools fastest) → test all three under identical conditions → analyse the results.

Q4. The chapter says that new discoveries can 'move a piece of the puzzle'. Explain what this means and give one example from your own knowledge where a scientific understanding changed over time.

Answer: It means new evidence can correct earlier ideas. Example: the earlier belief that the Sun revolved around the Earth was corrected by later scientific discovery.

Q5. Read this statement: 'To be a wise person, you must be a whys person.' What life skill does this phrase encourage? How does it connect to the scientific method?

Answer: It encourages the habit of asking 'why', which connects directly to observing and questioning — the first steps of the scientific method.

Q6. Raju's grandmother says she can predict rain by watching the behaviour of ants. Is she following the scientific method? Explain your answer using the steps from the chapter.

Answer: Partly — she is noticing a pattern (observation), but without testing it through an experiment, it remains an informal guess rather than a fully tested hypothesis.

Q7. The chapter says that 'science is rarely done alone'. How does working in a team make scientific discovery better? Give TWO reasons with examples.

Answer: Reasons: sharing ideas leads to faster problem-solving, and combining different expertise gives more complete answers — e.g., teams of scientists developing vaccines together.

Q8. Why is it important to protect Earth's environment, according to the chapter? Connect your answer to the diversity of life described.

Answer: Protecting the environment preserves the diversity of life that depends on Earth's balance, which is central to why Earth uniquely supports life.

Q9. Describe how you would design a simple observation activity to test whether plants need sunlight to grow, following the scientific method from the chapter.

Answer: Grow two sets of the same plant, one in sunlight and one without, keeping all other conditions the same, then observe and compare their growth.

Q10. The chapter says that every new piece of knowledge leads to more questions. Do you think this is a strength or a weakness of science? Justify your answer with TWO reasons.

Answer: A strength — because it shows science keeps growing and improving rather than becoming outdated; new questions lead to deeper understanding.

Section L — Higher Order Thinking Skills (HOTS)

Q1. The chapter says new discoveries sometimes show that a piece of the science jigsaw 'was put in the wrong place'. What does this mean about the nature of scientific knowledge? Is science always certain? Give reasons.

Answer: It means scientific knowledge is not always perfect or final — ideas can be corrected as we learn more. Science is not always 100% certain, but each correction brings us closer to the truth.

Q2. Do you think someone who does not go to school can still be a scientist? Support your answer using the definition and examples of the scientific method from the chapter.

Answer: Yes — being a scientist means observing, questioning and testing ideas, which anyone can do with curiosity, regardless of formal schooling.

Q3. The chapter compares science to an adventure. In what ways is doing science similar to going on an adventure? Identify at least FOUR similarities.

Answer: Similarities: both involve exploring the unknown, facing challenges, discovering new things, and require patience and curiosity.

Q4. A factory is releasing chemicals into a river. How could a group of students use the scientific method described in the chapter to investigate the problem and find a solution?

Answer: Students could observe the water and affected life, form a hypothesis about the chemicals' effect, test water samples, analyse results, and report findings to raise awareness or seek action.

Q5. Imagine you are in a place with no electricity, no textbooks, and no teacher. How would you still be able to 'do science'? Refer to the ideas in the chapter to explain your answer.

Answer: You could still observe your surroundings, ask questions, and test simple guesses using whatever is available — science mainly requires curiosity and careful thinking, not expensive tools.

Section M — Diagram and Flow-Chart Questions

Q1. Complete the flow chart of the Scientific Method by filling in the blank boxes. Step 1 OBSERVE something interesting or unexplained ↓ Step 2 _____ ↓ Step 3 Form a HYPOTHESIS (educated guess) ↓ Step 4 _____ ↓ Step 5 _____

Answer: Step 2: Wonder and ask a question about the observation. Step 4: Test the hypothesis through an experiment. Step 5: Analyse the results and draw a conclusion.

Q2. Sort the following examples into the correct column in the table below: Electrician checking a fuse | Astronomer watching stars | Chef tasting soup before adjusting spice | Student memorising a poem | Farmer testing soil before planting | Child wondering why ice melts Following the Scientific Method NOT Following the Scientific Method

Answer: Following the Scientific Method: Electrician checking a fuse, Astronomer watching stars, Chef tasting soup, Farmer testing soil, Child wondering why ice melts. NOT following: Student memorising a poem.

Q3. In the Venn diagram below, show the differences and similarities between a SCIENTIST IN A LAB and a PERSON SOLVING A DAILY PROBLEM using the scientific method. Scientist in a Lab (Only Here) Both Person Solving Daily Problem (Only Here)

Answer: Scientist in a Lab (only): uses lab equipment and controlled experiments. Both: observe, question, test ideas, show curiosity. Person Solving Daily Problem (only): uses everyday materials in an informal setting.

Q4. The steps of the scientific method are given below in the WRONG order. Number them 1–5 to show the correct sequence. _____ Form a hypothesis (make a guess). _____ Analyse the results to see if the question is answered. _____ Observe something that is interesting or unexplained. _____ Test the hypothesis through experiments or observations. _____ Wonder and think of a question about what you observed.

Answer: Correct order: 3-Form a hypothesis, 5-Analyse the results, 1-Observe, 4-Test the hypothesis, 2-Wonder and think of a question.

Q5. Read the following situation and answer the questions that follow: Aryan noticed that his torch stopped working. He thought the batteries might be dead. He replaced them with new batteries, but the torch still didn't work. He then guessed that the bulb might be faulty. He replaced the bulb and the torch started working.

- (a) Identify the hypothesis Aryan formed the first time.
- (b) Why was Aryan's first hypothesis incorrect?
- (c) Which step of the scientific method did Aryan repeat after his first hypothesis failed?

Answer: (a) That the batteries were dead. (b) Because the torch still didn't work after replacing the batteries. (c) He repeated forming a hypothesis (this time about the bulb) and testing it again.

Q6. Draw a labelled flow chart of the Scientific Method with all five steps. Inside each box, write a brief description of what happens at that step. Below the flow chart, give ONE real-life example that matches the complete flow chart. [Draw and label your flow chart here] Real-life example:

Answer: Flow chart: Observe → Wonder/Question → Hypothesis → Experiment/Test → Analyse Results, each box briefly described. Real-life example: an electrician checking why a light switch doesn't work.

Section N — Value-Based Questions

Q1. The chapter says, 'Science is rarely done alone.' In today's world, many big challenges — like climate change, disease, and pollution — are being solved by large teams of scientists from different countries. Based on this and Chapter 1, answer the following:

- (a) Why is working together important in science?
- (b) Which value does teamwork in science reflect? Name at least TWO values.
- (c) How can YOU contribute to solving a problem in your community using the scientific method? Describe your plan in 4–5 sentences.

Answer: (a) Working together allows scientists to share knowledge, resources and skills, helping solve large, complex problems faster than working alone. (b) Values: Cooperation and collaboration (teamwork). (c) Sample answer: I could observe a problem in my community, such as littering, think about why it happens, try a small solution like organising a cleanliness drive, and share the results with others to improve it further.

THAT WAS CHAPTER 1

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