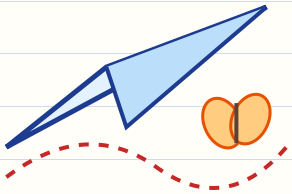
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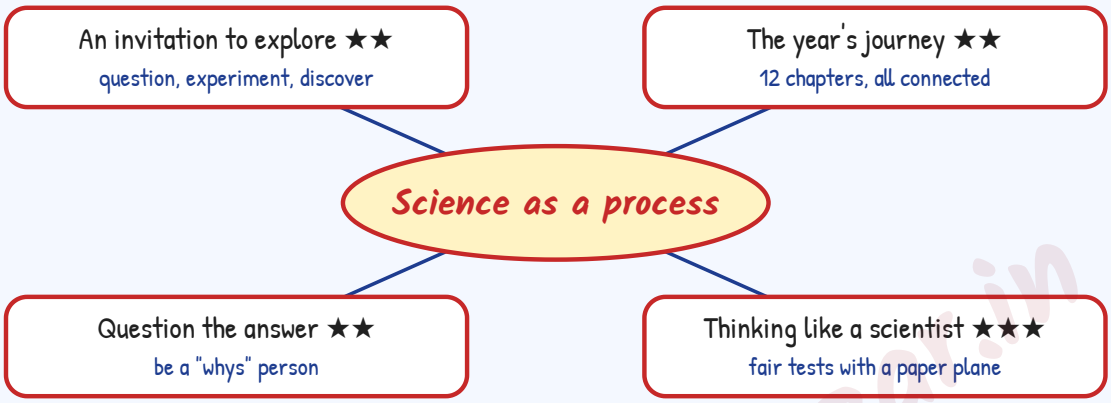
Class 7 · Science (Curiosity) · Chapter 1

The Ever-Evolving World of Science

New NCERT Curiosity, Grade 7 · 2026-27



Chapter map (★ = important for tests)



What is inside

1. Science: an invitation and a process; the butterfly and the paper plane
2. Out of the book: discovery and responsibility; connected fields
3. The year's journey: what each chapter asks
4. Activity 1.1: Question the Answer, with sample questions
5. Thinking like a scientist: questions, observations, variables
6. A fair test with paper planes, and the investigation cycle
7. Investigation toolkit; exam-style questions, 3 case studies, practice set of 48 questions, 20 MCQs, 6 A–R, answers

★ **Exam tip:** **Score here**: know the **topics of the year** and the question each one starts from; explain why science is a **process**; in any experiment question, say **what you change**, **what you keep the same** and **what you measure** (a fair test).

Must-know words: curiosity, observation, question, hypothesis, experiment, fair test, variable, record, conclusion, sustainability.

Definition ✎ **One-line chapter**: science is a way of thinking that welcomes curiosity, asks questions and tests ideas; this year's topics, from acids to eclipses, are all connected, and science also helps us act responsibly towards our planet.

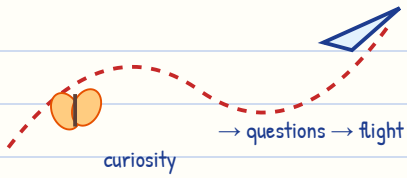
Based on NCERT "Curiosity" Grade 7 (2026-27), Chapter 1. Figures redrawn and answers written by us. New book: questions are Exam-style.

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1.1 An invitation to explore ★★

Ans. Curiosity (Grade 7) is **not just a textbook of facts**: it is an **invitation** to question, to perform experiments and to explore the world we live in. Science covers everything, **small and large, near and far**: tiny cells inside a leaf, the movement of the Sun and stars, materials at home, water flowing underground.

Ans. **The butterfly and the paper plane**: the page numbers of the book follow the flight of a **butterfly** and a **paper plane**. As a butterfly flutters freely and a paper plane flies into the sky, **learning takes flight when curiosity leads the way**.



learning takes flight when curiosity leads

Definition ✎ **Simple observations lead to big science**: something as simple as a **paper plane** inspired real scientific explorations of **flight**. From early inventors studying **bird wings** to modern engineers designing **aircraft**, the dream of flying started with simple observations and experiments.

Ans. **Science is a process** (as in Grade 6): a way of thinking that **welcomes curiosity**, **asks questions** and is **open to the unknown**. It is not only about discovering new facts or learning about different things in nature.

Ans. **Deeper questions in Grade 7**: **How** do things work? **Why** do events happen the way they do? What can we learn from the **patterns** we see in nature?

Remember from Grade 6: "To be a **wise** person, you must be a **whys** person." Asking "why?" again and again is how scientists begin.

★ ***Exam tip:*** **Exam tip**: if asked "Why is science called a process?", write: it does not stop at facts; it keeps asking questions, testing ideas by experiments and observations, and revising what we know when new evidence appears.

Stepping out of the book ★★

Ans. To ask deeper questions we must **step out of the book**, perhaps out of the classroom, and **experience the world** through activities and experiments. These experiences are meant to be **stepping stones** to a deeper understanding of our environment and of **our place on this planet**, and to show science as an **ongoing process of discovery**.

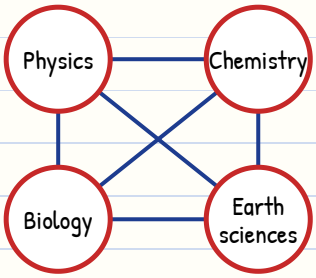
Definition ✎ **Discovery and responsibility**: as young science explorers you will see how **human activities** are linked to what happens in the **natural world** and to the **society** we live in, and how science can help to address **environmental challenges** and create a more **sustainable** world.

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Examples of the link: burning fuels warms the air and the planet; cutting forests changes rainfall and soil; throwing plastic harms rivers and animals; saving electricity and water reduces the load on nature. Science helps us measure these effects and find better ways.

All the fields are connected ★★

> **Ans.** Chapters are from **physics, chemistry, biology and earth sciences**, but they are **interconnected**: ideas in one area often inspire discoveries in another, or at least let us ask new questions there.



every field links to every other

Link	Example from this year
chemistry ↔ biology	acids in sour fruits; digestion and the food we eat
physics ↔ earth sciences	heat from the Sun drives evaporation, rain and winds
physics ↔ biology	sunlight and shadows; plants use light to make food
chemistry ↔ physics	a battery runs out because of chemical changes inside it; electricity needs the right materials

★ ***Exam tip:*** **Even "confirming" experiments raise questions**: an experiment that seems to show what we expected may lead to further questions that need more experiments, and more questions. That is why science keeps evolving.

The year's journey ★★

The questions the book asks, and the chapter of Curiosity Grade 7 that explores each.

Starting question (from the book)	Chapter
Why are some fruits sour? What happens when we wash a **haldi stain** on our uniform?	2. Exploring Substances: Acidic, Basic, and Neutral
What do we need to make a **lamp glow** with batteries and wires?	3. Electricity: Circuits and their Components
How can we **classify materials** by their properties?	4. The World of Metals and Non-metals
Batteries run out, ice melts, fruits ripen, rocks break: which **changes** can be reversed?	5. Changes Around Us: Physical and Chemical
Why are our **bodies changing** so fast in the middle-school years?	6. Adolescence: A Stage of Growth and Change

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How does **heat flow**: an ice cube in a glass, a melting glacier? How does water evaporate, fall as rain and trickle underground?	7. Heat Transfer in Nature
What is **time**, how do we measure it, and how **fast** does something happen?	8. Measurement of Time and Motion
How do animals **eat, breathe** and move nutrients round the body?	9. Life Processes in Animals
Don't plants need food too? How do they get it? Do they **breathe**?	10. Life Processes in Plants
How do **shadows** form, and how does light help us see?	11. Light: Shadows and Reflections
Why do we have **day and night**? How do the Earth and Moon cause **eclipses**?	12. Earth, Moon, and the Sun

> **Ans.** **Time and shadows**: long before electric clocks, **early humans used the position of shadows** in sunlight to tell the time. Light also gives us deep understanding of the universe.

> **Ans.** **Bigger than us**: even the **Earth and the Moon cast shadows**, giving eclipses. Day and night depend on light from the Sun; to understand them we study how the Earth rotates, how the Moon goes round the Earth and the Earth round the Sun.

A thread through the year: materials (2, 4) → electricity and changes (3, 5) → heat and water (7) → our bodies and life processes (6, 9, 10) → time, light and the sky (8, 11, 12).

Activity 1.1: Question the Answer ★★

> **Ans.** Usually we are given questions and must find answers. Turn it around! To think like a scientist it is **equally important to ask interesting questions**. Great scientists don't just answer questions: they **ask amazing ones**. There are **never any wrong questions**: let your imagination run wild.

> ***Definition*** ✎ **The book's example**: answer "**Just make it half!**" could answer "How do we get equal shares of cake?", "My essay is too long", "I can't fit this in the envelope", or "I cannot dance to such a long song": all very different!

Sample creative questions (yours can be different).

Answer	*Some possible questions*
Just add some milk.	How can I make my tea less bitter? The dough is too dry: what now? How do I make my paint a lighter shade of brown? The kitten looks hungry: what should I put in its bowl?
Because the cat's teeth were crooked.	Why did the vet say the cat could not chew its food? Why were the bite marks on the mango so uneven? How did the detective know which cat stole the fish?
Don't panic, I have my towel.	The sudden rain soaked us on the way home: what do we do? I spilled water on the laptop! The swimming class ended early: how will I dry off? (It is also a famous line in a science-fiction story.)
42	How many steps lead up to our school terrace? How many days did my bean seed take to flower? How many seconds did the ice cube take to melt in my hand? In which year will I be the age my father is now?

★ ***Exam tip:*** **Not like this** (the book's warning): avoid obvious questions such as "What is 32 + 10?" or "What is the answer to life, the universe and everything?" A good question is **surprising**, opens a story, or can lead to an **investigation**.

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Why this activity matters: one answer can fit many questions, so we must think about **context**. Scientists also work backwards: they see a result ("the plant leaned towards the window") and ask which question or cause could explain it.

Thinking like a scientist ★★★

Definition ✎ **Observation**: what we notice with our senses or instruments ("the paper plane dipped and landed after 4 m"). **Inference**: what we think explains it ("the nose was too heavy"). Observations are facts we record; inferences are ideas we must test.

Definition ✎ **Scientific question**: one we can answer by observing or experimenting ("Does a plane with bigger wings fly farther?"). "Which colour of plane is the prettiest?" is a matter of opinion, not a scientific question.

> **Ans.** **Hypothesis**: a possible answer that can be tested, e.g. "Planes with folded wing tips fly farther because they fly straighter." An experiment can **support** it or show it is **wrong**; either way we learn something.

A paper-plane investigation: what can we change, and what can we measure? ★★★

Things we can change (variables)	Choices
size of the paper	A4, half A4
type of paper	newspaper, notebook, chart paper
wing shape	narrow dart, wide glider
paper clip on the nose	none, 1, 2
throw	gentle, hard; angle up, level

Things we can observe or measure	Type of answer
distance flown	a number (m)
time in the air	a number (s)
did it fly straight?	yes / no
did it loop or dive?	notes

Definition ✎ **Fair test**: change **only one thing at a time** and keep everything else the same. To see the effect of the paper clip, use planes of the same paper, size and fold, thrown the same way from the same spot; only the number of clips changes.

✗ **Don't do this: Not a fair test**: adding a clip **and** throwing harder at the same time. If the plane flies farther, you cannot tell which change caused it.

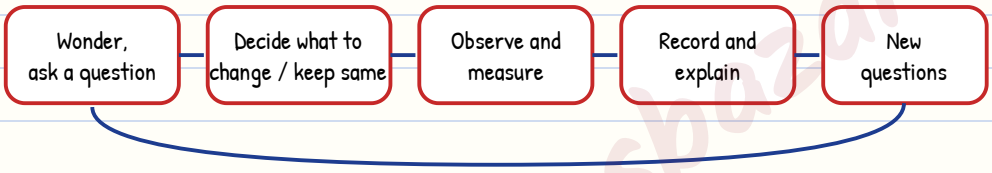
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Recording a fair test ★★★

Trial	Paper clips on the nose	Kept the same	Distance (m), 3 throws	Average (m)	Notes
1	0	same A4 notebook paper, same dart fold, gentle level throw from the same line	3.8, 4.2, 4.0	4.0	rose, then stalled
2	1		5.6, 5.9, 5.3	5.6	long smooth glide
3	2		3.1, 2.7, 3.2	3.0	dived early

Example values for practice, not from the textbook. Repeat each trial and take the average to reduce chance errors.

> **Ans.** **Conclusion from these values**: one clip gave the longest flights; no clip made the plane stall; two clips made it nose-dive. A little weight at the front helps, too much spoils the glide. **New questions**: would one clip help a wide glider too? What about half a clip (a smaller clip)?



the cycle of a systematic investigation: new questions start new rounds

Definition ✎ **Systematic investigation**: ask, plan a fair test, observe and measure, record, explain, and ask again. This is how all scientific experiments are done, simple or complicated. Even everyday things (why a puri puffs, why a paper plane glides) are not completely understood, which makes them good questions.

★ **Exam tip: Record everything**: write down what you change, what you keep the same, every measurement (not only the best one), and anything unexpected. Others should be able to repeat your test and check your results.

Investigation toolkit ★★★

Word	Meaning	Example
curiosity	the wish to know and understand	Why do some fruits taste sour?
observation	what we notice with senses or instruments	the haldi stain turned red with soap
scientific question	a question answered by observing or testing	Does salt water freeze slower than plain water?
hypothesis	a testable possible answer	"Soap is basic, so it turns haldi red."
variable	something that can be changed or can change	paper size, throw, number of clips
fair test	change one variable, keep the rest the same	only the clips change
measurement	a number with a unit	5.6 m, 12 s
record	a table or notes of every result	the trial table on page 7
conclusion	what the results show, and how sure we are	one clip flew farthest (in our trials)
sustainability	meeting our needs without harming the future	saving water and electricity

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Ans. **Reversible and irreversible changes** from the chapter: ice melting into water (can be reversed by freezing); rocks breaking into pebbles, fruits ripening and a torch battery running out (cannot be reversed).

Ans. **Life processes** essential to all animals: eating, breathing, blood circulating nutrients. Plants too need food and breathe, and life has evolved to do this in a **beautiful, carefully balanced way**.

X Don't do this: Common mistakes: (1) calling an opinion question ("Which planet is the nicest?") scientific; (2) changing two things at once; (3) writing an inference as an observation; (4) thinking science is finished: every answer can raise new questions.

Everyday questions to investigate: Which dries a wet cloth faster, sun or shade? Does a seed sprout faster in warm or cold water? Do ants prefer sugar or salt? Which ball bounces highest on a cement floor?

Exam-style questions *Exam-style*

1. Name the four fields of science mentioned in the chapter. [1]

Ans. Physics, chemistry, biology, earth sciences.

2. How did early humans tell the time? [1]

Ans. From the position of shadows in sunlight.

3. Why is science called a process? [2]

Ans. It keeps asking questions, testing and revising ideas; it is not only a set of facts.

4. Give one reversible and one irreversible change mentioned. [2]

Ans. Ice melting; fruit ripening (or a battery running out).

5. What is a fair test? [2]

Ans. Changing only one thing and keeping all else the same.

6. Write two creative questions for the answer "Just add some milk." [3]

Ans. e.g. How can I make my tea less bitter? The dough is too dry: what now?

7. How are science and responsibility linked? Give two examples. [3]

Ans. Human actions affect nature (fuels, plastic); science helps find sustainable ways.

8. Plan a fair test to find whether the number of paper clips on its nose changes how far a paper plane flies. [5]

Ans. Change: number of clips (0, 1, 2). Keep the same: paper, size, fold, throw, place. Measure: distance (3 throws each, average). Record in a table and conclude; ask new questions.

Case study 1: the haldi stain Exam-style. Riya's uniform has a yellow haldi stain. When she rubs soap on it, the stain turns reddish-brown.

(i) What did Riya observe? **The yellow stain turned red with soap.** [1]

(ii) Write a scientific question about it. **Does every soap turn haldi red?** [1]

(iii) Which chapter explores this? **Acidic, basic and neutral substances.** [1]

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(iv) Suggest a fair test. **Same stain, same amount of different soaps and detergents; only the soap changes.** [2]

Case study 2: the shadow clock Exam-style. A stick is planted in an open ground and its shadow is marked every hour.

(i) Why does the shadow move? **The Sun's position in the sky changes.** [1]

(ii) When is the shadow shortest? **Around noon.** [1]

(iii) What did early humans use this for? **Telling the time.** [1]

(iv) Name two chapters linked to this. **Light: Shadows and Reflections; Earth, Moon, and the Sun.** [2]

Practice set: test yourself *Exam-style*

Try every question before looking at the answers at the end of the chapter. 40 or more out of 48 means you are ready for the test.

A. Fill in the blanks (1 mark each)

1. Science is not just facts; it is a _____.
2. "To be a wise person, you must be a _____ person."
3. Changing only one thing at a time makes a _____ test.
4. The things we can change in an experiment are _____.
5. The book's page numbers follow a butterfly and a _____.
6. Melting of ice can be _____ by freezing.
7. Early humans used _____ to tell the time.
8. When the Earth or Moon casts a shadow on the other, we see an _____.

B. True or false? (1 mark each)

1. The branches of science are not connected.
2. Asking questions is as important as answering them.
3. A fair test changes two things at once.
4. An experiment that confirms an idea can still raise new questions.
5. Science has nothing to do with caring for the environment.
6. A used torch battery can be used again and again.
7. Plants also need food to grow.
8. In Activity 1.1 some questions are wrong.

C. Very short answer (1 mark each)

1. Which chapter asks how to make a lamp glow?
2. Give a change that cannot be reversed.
3. What makes sea water evaporate?
4. What causes day and night?
5. What is a hypothesis?
6. Name one life process common to all animals.
7. Which simple object inspired studies of flight?

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8. What do we call what we notice with our senses?
9. Why repeat a trial three times?
10. Write one question about a haldi stain.

D. Short answer I (2 marks each)

1. Why should we change only one thing at a time?
2. Give the difference between an observation and an inference, with an example.
3. Why does the book say the chapters are interconnected? Give an example.
4. Which is a scientific question: "Does salt water freeze slower?" or "Which colour is prettiest?" Why?
5. Give two ways human activities affect the natural world.
6. Why should we record every result, not just the best one?
7. Name two variables you could change in a paper-plane test and one you could measure.
8. What are the three "deeper questions" for Grade 7?

E. Short answer II (3 marks each)

1. Plan a fair test: does the size of the paper change how far a paper plane flies?
2. Explain the cycle of a systematic investigation.
3. Write three starting questions from the year's journey and the chapter that answers each.
4. Why is "What is 32 + 10?" a poor question for the answer 42? Write a better one.
5. Give three examples of changes from the chapter and say whether each can be reversed.
6. How did simple observations lead to aircraft?

F. Long answer (5 marks each)

1. Design a full investigation on paper planes: question, hypothesis, variables (changed, kept the same, measured), table and conclusion.
2. "Science is about discovery and also about responsibility." Explain with examples.
3. Using "Does a wet cloth dry faster in the sun or in the shade?", explain observation, question, hypothesis, fair test and conclusion.
4. Show how the topics of the year are connected, from materials to the Earth, Moon and Sun.

G. Challenge (HOTS) questions

1. Write two very different questions for the answer "Because it was raining."
2. Your plane flew farther in trial 2, but you had also thrown it harder. Can you conclude that the change in design helped? Why?
3. Two groups doing the same experiment got different results. Give two reasons and a fix.
4. Is "Which is the most beautiful flower?" a scientific question? How could you change it into one?

Case study 3: the melting ice cube Exam-style. Arjun puts identical ice cubes in a steel glass and a plastic glass and times how long each takes to melt.
(i) What is he changing? [1] (ii) Name two things he must keep the same. [1] (iii) What does he measure? [1] (iv) Which chapter will help him explain the result? [2]

My score (fill in after checking the answers)

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Section	A /8	B /8	C /10	D /16	E /18	F /20	G (bonus)	Total /80
My marks								

Rough work

20 MCQs

1. Science, according to the book, is mainly
(a) a list of facts (b) a subject for exams (c) a process (d) only experiments

2. The page numbers follow a butterfly and a
(a) paper plane (b) kite (c) bird (d) balloon

3. "To be a wise person, you must be a ___ person"
(a) careful (b) quiet (c) busy (d) whys

4. A fair test changes
(a) everything (b) only one thing (c) nothing (d) two things

5. Early humans told the time using
(a) clocks (b) shadows (c) stars only (d) water

6. Which change cannot be reversed?
(a) ice melting (b) water freezing (c) wax melting (d) fruit ripening

7. Sour fruits and haldi stains are explored in the chapter on
(a) acidic, basic and neutral substances (b) heat (c) light (d) electricity

8. Eclipses happen because
(a) the Sun switches off (b) clouds cover the Sun (c) the Earth or Moon casts a shadow (d) the Moon makes light

9. A testable possible answer to a question is a
(a) variable (b) record (c) conclusion (d) hypothesis

10. Which is a scientific question?
(a) Which song is best? (b) Does a seed sprout faster in warm water? (c) Is red prettier than blue? (d) Who is the nicest person?

11. In a paper-plane test, the distance flown is something we
(a) ignore (b) keep the same (c) measure (d) guess

12. The fields of science named in the chapter include
(a) physics, chemistry, biology, earth sciences (b) only physics (c) history and geography (d) only biology

13. A torch battery that has run out
(a) can be reused forever (b) cannot be used again (c) becomes a magnet (d) turns into water

14. Heat from the Sun makes sea water
(a) freeze (b) turn salty (c) evaporate (d) stop moving

15. Repeating each trial helps to
(a) waste time (b) avoid recording (c) change the result (d) reduce chance errors

16. Life processes needed by all animals include
(a) eating and breathing (b) rusting (c) melting (d) photosynthesis only

17. An inference is
(a) an idea that explains an observation (b) a measurement (c) a unit (d) an instrument

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18. Science helps us to create a more
(a) wasteful world (b) noisy world (c) polluted world (d) sustainable world

19. Day and night are caused by
(a) the Moon's phases (b) the Earth's rotation (c) eclipses (d) clouds

20. In Activity 1.1 the task is to
(a) answer questions (b) solve sums (c) write questions for given answers (d) copy answers

1 (c) · 2 (a) · 3 (d) · 4 (b) · 5 (b) · 6 (d) · 7 (a) · 8 (c) · 9 (d) · 10 (b) · 11 (c) · 12 (a) · 13 (b) · 14 (c) · 15 (d) · 16 (a) · 17 (a) · 18 (d) · 19 (b) · 20 (c)

Assertion–Reason (6)

(a) Both true, R explains A. (b) Both true, R does not explain A. (c) A true, R false. (d) A false, R true.

1. A: In a fair test only one thing is changed. R: Otherwise we cannot tell which change caused the result.
2. A: Science is a finished body of knowledge. R: Experiments that confirm an idea often raise new questions.
3. A: Early humans could tell the time without clocks. R: The position of a shadow changes as the Sun moves across the sky.
4. A: Ice melting is a change that can be reversed. R: Rocks breaking into pebbles cannot be reversed.
5. A: "Which flower is the most beautiful?" is a scientific question. R: Scientific questions can be answered by observation or experiment.
6. A: The chapters of the book are interconnected. R: Ideas in one area of science often inspire discoveries in another.

Key: 1 (a) · 2 (d) · 3 (a) · 4 (b) · 5 (d) · 6 (a)

Answers to the practice set

A. 1. process 2. whys 3. fair 4. variables 5. paper plane 6. reversed 7. shadows 8. eclipse

B. 1. F 2. T 3. F 4. T 5. F 6. F 7. T 8. F (there are never any wrong questions)

C. 1. Electricity: Circuits and their Components 2. e.g. fruit ripening 3. heat from the Sun 4. the Earth's rotation 5. a testable possible answer 6. eating / breathing 7. a paper plane 8. an observation 9. to reduce chance errors 10. e.g. Why does a haldi stain turn red with soap?

D. 1. so that we know which change caused the result
2. observation: what we notice (the plant leaned); inference: our explanation (it grows towards light)
3. ideas in one field lead to questions in another, e.g. heat from the Sun (physics) and rain (earth sciences)
4. the first: it can be tested; the second is opinion
5. e.g. burning fuels warms the air; plastic pollutes rivers
6. results vary; all values give a fair average and honest record
7. change: paper size, clips; measure: distance
8. How? Why? What patterns?

E. 1. change: paper size (A4, half A4); same: paper type, fold, throw, place; measure: distance, 3 throws each; compare averages
2. wonder and ask → decide what to change and keep same → observe and measure → record and explain → new questions
3. e.g. sour fruits (Ch 2); lamp glow (Ch 3); shadows (Ch 11)
4. it is obvious and leads nowhere; better: "How many days did my seed take to flower?"
5. ice melting (reversible); fruit ripening, battery running out, rocks breaking (not)
6. people watched birds and toys like paper planes, tested wings and shapes, and improved designs step by step

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F. 1. e.g. Q: do clips help? H: one clip helps; change clips, keep paper/fold/throw same, measure distance; table; conclusion with new questions

2. discovery: new knowledge; responsibility: human actions affect nature, science helps solve problems sustainably (examples)

3. observation: cloth in the sun dried first; question; hypothesis: heat speeds drying; fair test: same cloth, same water, only place changes; conclusion

4. materials → electricity → metals; changes → heat → water cycle; life processes; time → light → Earth, Moon, Sun

G. 1. e.g. Why was the match cancelled? Why are the snails out on the wall? 2. No: two things changed, so it is not a fair test 3. different conditions or measuring methods, chance; repeat with the same conditions and average 4. No (opinion); e.g. "Which flower attracts the most bees?"

Case study 3. (i) the material of the glass (ii) same size ice, same room, same starting time (iii) time to melt (iv) Heat Transfer in Nature

Last-night summary

- Science is an invitation and a process: curiosity, questions, experiments, openness to the unknown; Grade 7 asks how, why and what patterns.
- Step out of the book: activities and experiments; science links discovery with responsibility and sustainability.
- Physics, chemistry, biology and earth sciences are interconnected; experiments that confirm ideas still raise new questions.
- The year: substances, electricity, metals, changes, adolescence, heat, time, life processes, light, Earth–Moon–Sun.
- Think like a scientist: ask good questions, observe, form a hypothesis, do a fair test (one change at a time), record, conclude, ask again.

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