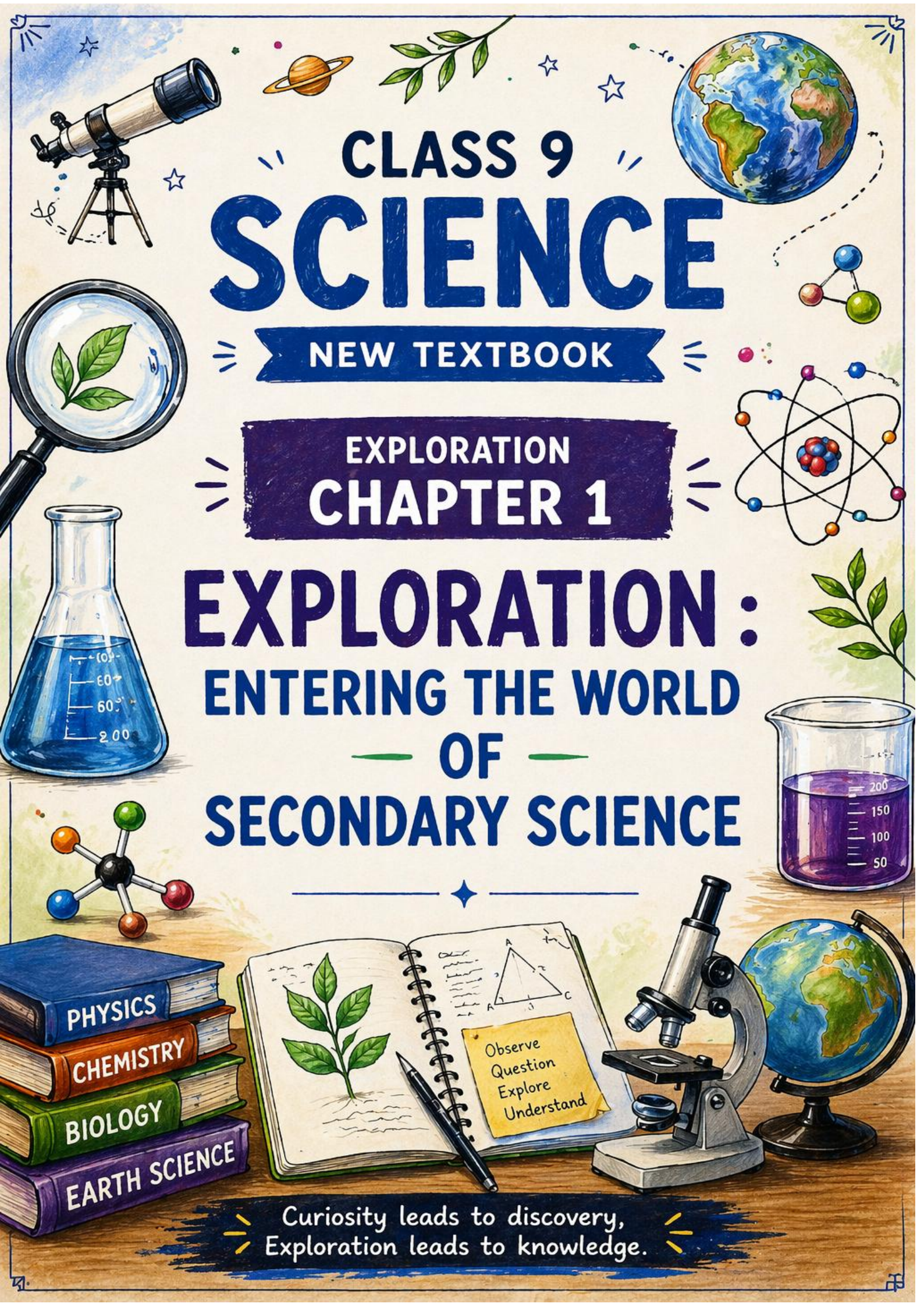

CLASS 9
SCIENCE
NEW TEXTBOOK
EXPLORATION
CHAPTER 1
EXPLORATION :
ENTERING THE WORLD
OF
SECONDARY SCIENCE
PHYSICS
CHEMISTRY
BIOLOGY
EARTH SCIENCE
Observe
Question
Explore
Understand
Curiosity leads to discovery,
Exploration leads to knowledge.

CHAPTER 1

EXPLORATION: ENTERING THE WORLD OF SECONDARY SCIENCE

KEYWORDS WITH DEFINITIONS

1. Science
A systematic way of understanding the natural world through observation, experimentation, and reasoning.

2. Observation
Careful watching and noting of events, patterns, or changes using senses or tools.

3. Exploration
The process of investigating and discovering new knowledge with purpose.

4. Model
A simplified representation of a real object or system used to understand it better.

5. Assumption
An idea accepted as true without proof to simplify a model or explanation.

6. Simplification
The process of reducing complexity by focusing only on important details.

7. Scientific Language
Use of clear, precise terms, symbols, and units to communicate ideas in science.

8. Quantity
A measurable property such as mass, length, time, or temperature.

9. Unit
A standard measurement used to express a quantity (e.g., kg, metre, second).

10. SI Units
Internationally accepted standard units of measurement used worldwide.

11. Mathematics (in Science)
A tool used to express relationships, solve problems, and make predictions.

12. Equation
A mathematical statement showing relationship between quantities.

$$S = ut + \frac{1}{2}at^2$$

13. Law (Scientific Law)
A rule that describes a consistent pattern observed in nature.

14. Theory (Scientific Theory)
A well-tested explanation of why something happens, based on evidence.

15. Principle
A general idea or rule that helps explain and understand situations.

16. Prediction
A scientific guess based on evidence and reasoning about future events.

17. Evidence
Information or data used to support scientific ideas or conclusions.

18. Estimation
A rough calculation used to check whether an answer is reasonable.

19. Measurement
The process of finding the value of a quantity using standard units.

20. Scientific Thinking
Logical thinking based on evidence, observation, and reasoning.

21. Interdisciplinary Approach
Using ideas from different branches of science together to solve problems.

22. Prediction Failure
When results do not match predictions, leading to re-examination and improvement of ideas.

23. Scientific Attitude
A way of thinking that includes curiosity, open-mindedness, and logical reasoning.

24. Approximation
A value close to the exact answer, useful in early stages of problem solving.

25. Standardisation
Using the same units and methods everywhere to ensure accuracy and fairness.

Remember:
- Science is based on curiosity and questioning.
- It uses observation, experimentation and logical thinking.
- Ideas are tested, improved and shared.

Scan this QR code for more notes, mind maps and videos!

CHAPTER 1

EXPLORATION: ENTERING THE WORLD OF SECONDARY SCIENCE

Science begins with curiosity and leads us to understand how things work through careful observation and experiments.

1 WHAT IS SCIENCE EXPLORATION?

- Science encourages curiosity and observation.
- It helps us ask questions and find answers.
- Based on careful experiments and logical thinking.
- Focuses on what we know and how we know it.

2 ROLE OF OBSERVATION & EXPLORATION

- Careful observation helps us notice patterns.
- Asking the right questions is very important.
- Exploration is not random; it is done with purpose and direction.

3 USE OF MODELS IN SCIENCE

- The real world is complex.
- Models are simplified versions that help us understand it.
- Models focus on important details and ignore less important ones.
- Examples : Atom → shown as sphere
  Earth → divided into layers
- Models are built using assumptions and simplifications.

4 IMPORTANCE OF SIMPLIFICATION

- Not all details are needed to understand something.
- Simplification helps in easier understanding and better explanation.
- Ignoring some details is intentional and useful.

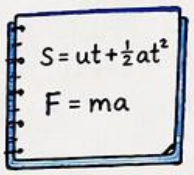
5 SCIENCE LANGUAGE & MEASUREMENT

- Science uses precise words, symbols and units.
- Helps in clear and unambiguous communication.
- Examples :

Mass	–	m	(kilogram)
Velocity	–	v	(metre per second)
Force	–	F	(newton)

- Ensures same meaning everywhere in the world.

6 ROLE OF MATHEMATICS IN SCIENCE



- Mathematics is the language of science.
- Helps to express relationships between quantities.
- Equations show the connection between quantities.
- Helps in making predictions.
- Focus should be on understanding, not memorising.

7 STANDARD UNITS (SI UNITS)

- Use of standard units avoids confusion.
- Example : Kilogram used everywhere for mass.
- Important for accuracy and fairness in comparison.

8 SCIENTIFIC LAWS, THEORIES & PRINCIPLES

- Law : Describes a regular pattern in nature.
- Theory : Explains why something happens; based on lots of evidence.
- Principle : Broad idea that helps to understand different situations.
- These are tested, revised and improved with new evidence.

9 PREDICTIONS IN SCIENCE

- Science helps us predict outcomes of events.
- Based on evidence and reasoning.
- If predictions fail, ideas are rechecked and improved.

10 SCIENTIFIC THINKING

- Based on evidence, not on guessing.
- Involves asking measurable questions.
- Looks at past patterns to understand future events.

11 IMPORTANCE OF ESTIMATION

- Exact values are not always needed.
- Estimation helps to check if answer is reasonable.
- Builds logical thinking and confidence.

12 INTERCONNECTION OF SCIENCE BRANCHES

- Science includes Physics, Chemistry, Biology, Earth Science and more.
- Real-life problems need combination of multiple fields.

13 SCIENCE IN DAILY LIFE

- Helps us understand technology and environment.
- Examples: Weather prediction, food safety, myths and many more.

14 NATURE OF SCIENCE

- Science is not fixed or final.
- It keeps improving with new discoveries.
- Based on curiosity, testing ideas and learning from mistakes.

15 SCIENTIFIC ATTITUDE

- Develop curiosity.
- Think logically and ask questions.
- Be open-minded and objective.
- Science helps us make sense of our world with care and responsibility.

CLASS IX – SCIENCE

CHAPTER 1

EXPLORATION: ENTERING THE WORLD OF SECONDARY SCIENCE

Scan for Notes & Mind Maps

SHORT REVISION SHEET

1. WHAT IS SCIENCE?

- Science is a systematic way of understanding the natural world.
- It begins with curiosity and uses observation, experimentation and reasoning.
- It helps us answer questions and find solutions to problems.
- Focuses on what we know and how we know it.

2. THE ROLE OF OBSERVATION & EXPLORATION

- Careful observation helps us notice patterns.
- Asking the right questions is very important.
- Exploration is not random; it is done with purpose and direction.
- It helps in building scientific knowledge.

3. MODELS IN SCIENCE

- The real world is complex.
- Models are simplified versions of real objects or systems to help us understand them.
- They focus on important details and ignore less important ones.
- Examples: Atom – shown as sphere, Earth – divided into layers.
- Models are based on assumptions and simplifications.

4. IMPORTANCE OF SIMPLIFICATION

- Not all details are needed to understand something.
- Simplification helps in easier understanding and better explanation.
- Ignoring some details is intentional and useful.

5. SCIENCE LANGUAGE & MEASUREMENT

- Science uses precise words, symbols and units.
- Helps in clear and unambiguous communication.
- Examples of symbols:

Mass	–	m	(kilogram)
Velocity	–	v	(metre per second)
Force	–	F	(newton)

- SI Units ensure same meaning everywhere and allow fair comparison.

6. ROLE OF MATHEMATICS IN SCIENCE

- Mathematics is the language of science.
- Helps to express relationships between quantities.
- Equations show the connection between quantities.

$$S = ut + \frac{1}{2}at^2$$

$$F = ma$$

- Helps in making predictions and solving problems.
- Focus should be on understanding, not memorising.

7. LAWS, THEORIES & PRINCIPLES

- **Law** – Describes a regular pattern in nature.
- **Theory** – Explains why something happens; based on lots of evidence.
- **Principle** – Broad idea that helps to understand different situations.
- These ideas are tested, revised and improved with new evidence.

8. PREDICTIONS IN SCIENCE

- Science helps us predict outcomes of events.
- Predictions are based on evidence and reasoning.
- If predictions fail, ideas are rechecked and improved.

9. SCIENTIFIC THINKING

- Based on evidence, not guesses.
- Involves asking measurable questions.
- Looks at past patterns to understand future events.

10. IMPORTANCE OF ESTIMATION

- Exact values are not always needed.
- Estimation helps to check if answer is reasonable.
- Builds logical thinking and confidence.

11. INTERCONNECTION OF SCIENCE BRANCHES

- Science includes Physics, Chemistry, Biology, Earth Science and more.
- Real-life problems need a combination of multiple fields.

12. SCIENCE IN DAILY LIFE

- Helps us understand technology and environment.
- Examples: weather prediction, food safety, myths and many more.

13. NATURE OF SCIENCE

- Science is not fixed or final.
- It keeps improving with new discoveries.
- Based on curiosity, testing ideas and learning from mistakes.

14. SCIENTIFIC ATTITUDE

- Develop curiosity and ask questions.
- Be open-minded and objective.
- Science helps us make sense of our world with care and responsibility.

KEY IDEA: Science is a way of thinking and exploring the world carefully, using evidence, logic and creativity.