


SAMPLE CONTENT

A close-up photograph of a honeybee on a pink flower, with its head near the yellow stamens. The background is a soft-focus pink.

CLASS IX CBSE SCIENCE

LOADED WITH AMAZING FEATURES



Connections



Concept Videos



Caution



Memory Map



Chapter Assessment

Ms. Meenal Iyer
M.Sc., B.Ed.

Mr. Rahul Jawale
M.Sc.

Ms. Mitha Soman
M.Sc.

Target Publications[®] Pvt. Ltd.

CLASS IX

CBSE

SCIENCE

Salient Features

- ☞ Subtopic wise segregation for powerful concept building
- ☞ Complete coverage of Textual Exercise Questions, Intext Questions, Activities and Exemplar Questions
- ☞ Extensive coverage of questions based on the latest typologies introduced by Board like; **Assertion-Reason, Case-study based Questions**
- ☞ Includes Higher Order Thinking (HOT) Questions to strengthen conceptual understanding of the topic
- ☞ Chapter-wise assessment with every chapter to allow self-evaluation
- ☞ Concept explanation videos included wherever required in the form of Q.R. codes
- ☞ Q.R. codes at the end of each chapter to provide Solutions of Textbook activities, Formative Assessment with Solutions and Answers to Chapter Assessment
- ☞ Memory maps at the end of each chapter to facilitate quick revision
- ☞ Compilation of all 'Important Formulae' in relevant chapters
- ☞ Enrich your knowledge, Gyan Guru, Connections, Cautions and Reading between the lines designed to impart holistic education

Scan the adjacent QR Code to download Quill-The Padhai App.

Enter Product Key PK-9CBSESCI2022 in Quill App to get 30 days Free Access of the e-book version of this book & experience digital interactive learning.



Printed at: **India Printing Works**, Mumbai

PREFACE

In the case of good books, the point is not how many of them you can get through, but rather how many can get through to you.

Target Notes for “**Class IX: CBSE Science**” is a complete, thorough, critically analysed and extensively drafted book to foster the student’s confidence.

The **Subtopic-wise** classified format for each chapter of this book helps the students to comprehend concepts easily. Each subtopic in a chapter begins with brief theory followed by questions, divided into **Objective Questions** (MCQs, Assertion & Reason, Very Short Answer Questions), **Case-study based Questions, Short Answer Questions Type I and II & Long Answer Questions**. Questions from Textual Exercise, Intext Questions, Exemplar Questions and Higher Order Thinking (HOT) Questions are included according to the flow of a subtopic. **Memory Map** and **Important formulae** are placed at the end of the chapter.

Practice Problems for relevant chapters are provided to assess the numerical solving skill. A **Chapter Assessment** is provided that stands as a testimony to the fact that the child has understood the chapter thoroughly.

Q.R. Code given at the end of each chapter can be scanned to view answers to **Textbook Activities, Formative Assessment** along with its answers which cover a wide range of activities and problems and is useful in preparation of internal assessment and **Answers to chapter Assessment**.

While ensuring the complete coverage of the syllabus in an effortless and easy to grasp format, emphasis is also given on active learning. To achieve this, we have infused several titles such as, *Reading between the lines, Enrich your knowledge, Gyan Guru, Caution* and *Connections*.

The flow chart on the adjacent page will walk you through the key features of the book and elucidate how they have been carefully designed to maximize the student learning.

- Publisher

Edition: First

The journey to create a complete book is strewn with triumphs, failures and near misses. If you think we’ve nearly missed something or want to applaud us for our triumphs, we’d love to hear from you.

Please write to us on: mail@targetpublications.org

A book affects eternity; one can never tell where its influence stops.

Disclaimer

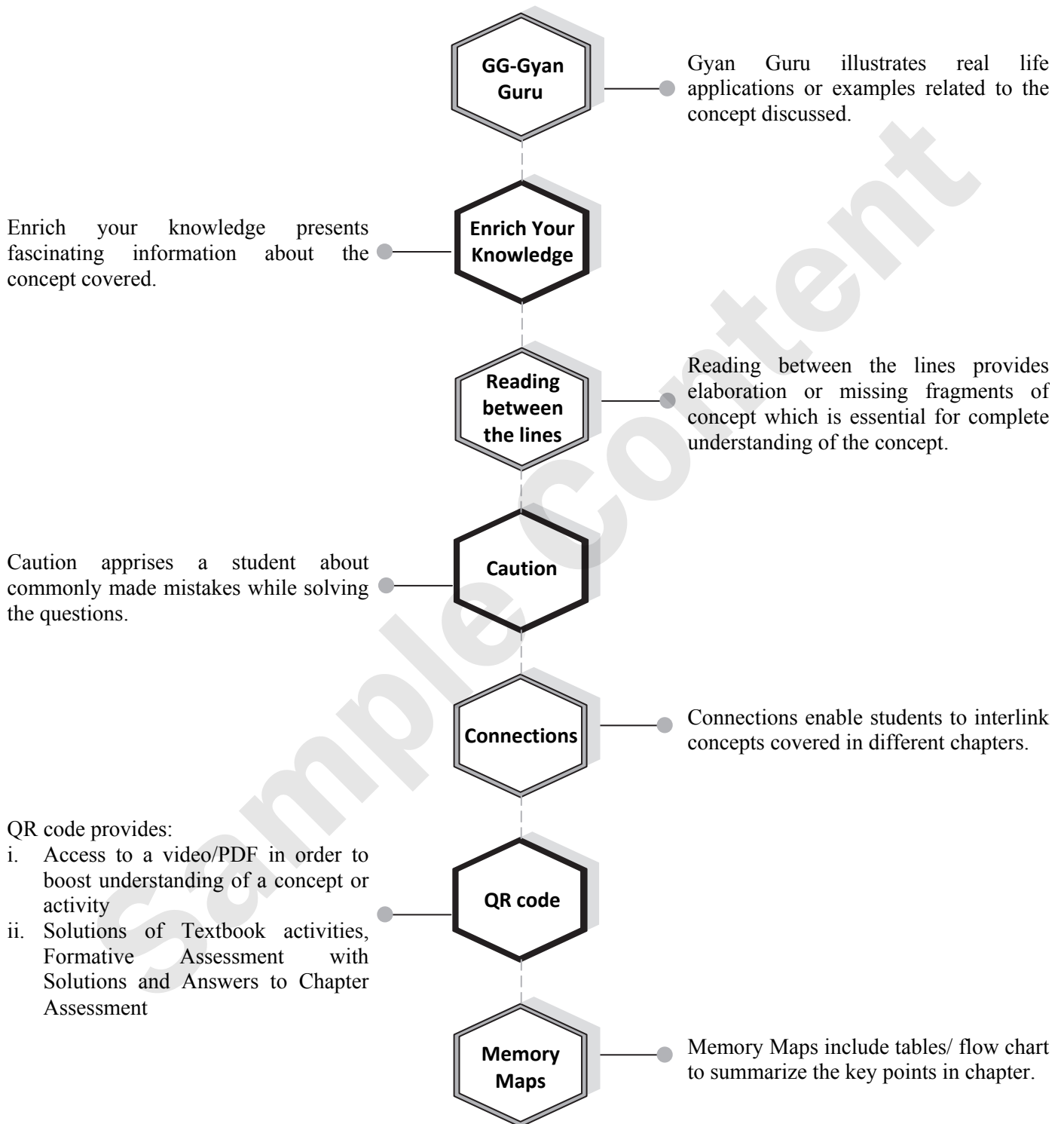
This reference book is transformative work based on Science textbook for class IX, Reprint: 2021 published by the National Council of Educational Research and Training (NCERT) and NCERT Exemplar: 2018 published by the National Council of Educational Research and Training (NCERT) and the Department of Education in Science & Mathematics (DESM). We the publishers are making this reference book which constitutes as fair use of textual contents which are transformed by adding and elaborating, with a view to simplify the same to enable the students to understand, memorize and reproduce the same in examinations.

This work is purely inspired upon the course work as prescribed by the National Council of Educational Research and Training (NCERT). Every care has been taken in the publication of this reference book by the Authors while creating the contents. The Authors and the Publishers shall not be responsible for any loss or damages caused to any person on account of errors or omissions which might have crept in or disagreement of any third party on the point of view expressed in the reference book.

© reserved with the Publisher for all the contents created by our Authors.

No copyright is claimed in the textual contents which are presented as part of fair dealing with a view to provide best supplementary study material for the benefit of students.

KEY FEATURES



COURSE STRUCTURE 2021 - 22

CLASS IX (Annual Examination)

Marks: 80

EVALUATION SCHEME			
THEORY			
Unit No.	Unit	Marks	Periods
I	Matter - Its Nature and Behaviour	23	50
II	Organization in the Living World	20	45
III	Motion, Force and Work	27	60
IV	Our Environment	06	15
V	Food; Food Production	04	10
	Total	80	
	Internal assessment	20	
	Grand Total	100	

Theme: Materials

(50 Periods)

Unit I: Matter-Nature and Behaviour

Definition of matter; solid, liquid and gas; characteristics - shape, volume, density; change of state-melting (absorption of heat), freezing, evaporation (cooling by evaporation), condensation, sublimation.

Nature of matter: Elements, compounds and mixtures. Heterogeneous and homogeneous mixtures, colloids and suspensions.

Particle nature and their basic units: Atoms and molecules, Law of constant proportions, Atomic and molecular masses. Mole concept: Relationship of mole to mass of the particles and numbers.

Structure of atoms: Electrons, protons and neutrons, valency, chemical formula of common compounds. Isotopes and Isobars.

Theme: The World of the Living

(45 Periods)

Unit II: Organization in the Living World

Cell - Basic Unit of life:

Cell as a basic unit of life; prokaryotic and eukaryotic cells, multicellular organisms; cell membrane and cell wall, cell organelles and cell inclusions; chloroplast, mitochondria, vacuoles, endoplasmic reticulum, Golgi apparatus; nucleus, chromosomes - basic structure, number.

Tissues, Organs, Organ System, Organism:

Structure and functions of animal and plant tissues (only four types of tissues in animals; Meristematic and Permanent tissues in plants).

Biological Diversity:

Diversity of plants and animals-basic issues in scientific naming, basis of classification. Hierarchy of categories / groups, Major groups of plants (salient features) (Bacteria, Thallophyta, Bryophyta, Pteridophyta, Gymnosperms and Angiosperms). Major groups of animals (salient features) (Non-chordates upto phyla and chordates upto classes).

Health and Diseases:

Health and its failure. Infectious and Non-infectious diseases, their causes and manifestation. Diseases caused by microbes (Virus, Bacteria and Protozoans) and their prevention; Principles of treatment and prevention. Pulse Polio programmes.

Theme: Moving Things, People and Ideas

(60 Periods)

Unit III: Motion, Force and Work

Motion:

Distance and displacement, velocity; uniform and non-uniform motion along a straight line; acceleration, distance-time and velocity-time graphs for uniform motion and uniformly accelerated motion, derivation of equations of motion by graphical method; elementary idea of uniform circular motion.

Force and Newton's laws :

Force and Motion, Newton's Laws of Motion, Action and Reaction forces, Inertia of a body, Inertia and mass, Momentum, Force and Acceleration. Elementary idea of conservation of Momentum.

Gravitation:

Gravitation; Universal Law of Gravitation, Force of Gravitation of the earth (gravity), Acceleration due to Gravity; Mass and Weight; Free fall.

Floatation:

Thrust and Pressure. Archimedes' Principle; Buoyancy; Elementary idea of Relative Density.

Work, energy and power:

Work done by a Force, Energy, power; Kinetic and Potential energy; Law of conservation of energy.

Sound:

Nature of sound and its propagation in various media, speed of sound, range of hearing in humans; ultrasound; reflection of sound; echo and SONAR. Structure of the Human Ear (Auditory aspect only).

Theme: Natural Resources: Balance in nature**(15 Periods)****Unit IV: Our Environment****Physical resources:**

Air, Water, Soil. Air for respiration, for combustion, for moderating temperatures; movements of air and its role in bringing rains across India. Air, water and soil pollution (brief introduction). Holes in ozone layer and the probable damages.

Bio-geo chemical cycles in nature: Water, Oxygen, Carbon and Nitrogen.

Theme: Food**(10 Periods)****Unit V: Food Production**

Plant and animal breeding and selection for quality improvement and management; Use of fertilizers and manures; Protection from pests and diseases; Organic farming.

PRACTICALS**(50 Periods)**

Practicals should be conducted alongside the concepts taught in theory classes.

(LIST OF EXPERIMENTS)

1. Preparation of: **Unit-I**
 - a. a true solution of common salt, sugar and alum
 - b. a suspension of soil, chalk powder and fine sand in water
 - c. a colloidal solution of starch in water and egg albumin/milk in water and distinguish between these on the basis of
 - transparency
 - filtration criterion
 - stability
2. Preparation of **Unit-I**
 - a. A mixture
 - b. A compound

using iron filings and sulphur powder and distinguishing between these on the basis of:

 - i. appearance, i.e., homogeneity and heterogeneity
 - ii. behaviour towards a magnet
 - iii. behaviour towards carbon disulphide as a solvent
 - iv. effect of heat
3. Separation of the components of a mixture of sand, common salt and ammonium chloride (or camphor). **Unit-I**
4. Perform the following reactions and classify them as physical or chemical changes: **Unit-I**
 - a. Iron with copper sulphate solution in water
 - b. Burning of magnesium ribbon in air
 - c. Zinc with dilute sulphuric acid
 - d. Heating of copper sulphate crystals
 - e. Sodium sulphate with barium chloride in the form of their solutions in water
5. Preparation of stained temporary mounts of (a) onion peel, (b) human cheek cells & to record observations and draw their labelled diagrams. **Unit-II**

6. Identification of Parenchyma, collenchyma and Sclerenchyma tissues in plants, striped, smooth and cardiac muscle fibers and nerve cells in animals, from prepared slides. Draw their labelled diagrams. **Unit-II**
7. Determination of the melting point of ice and the boiling point of water. **Unit-I**
8. Verification of the Laws of reflection of sound. **Unit-III**
9. Determination of the density of solid (denser than water) by using a spring balance and a measuring cylinder. **Unit-III**
10. Establishing the relation between the loss in weight of a solid when fully immersed in
 a. Tap water **Unit-III**
 b. Strongly salty water with the weight of water displaced by it by taking at least two different solids.
11. Determination of the speed of a pulse propagated through a stretched string/slinky (helical spring). **Unit-III**
12. Study of the characteristics of *Spirogyra*, *Agaricus*, Moss, Fern, Pinus (either with male or female cone) and an Angiospermic plant. Draw and give two identifying features of the groups they belong to. **Unit-II**
13. Observe the given pictures/charts/models of earthworm, cockroach, bony fish and bird. For each organism, draw their picture and record:
 a. one specific feature of its phylum. **Unit-II**
 b. one adaptive feature with reference to its habitat.
14. Verification of the law of conservation of mass in a chemical reaction. **Unit-III**
15. Study of the external features of root, stem, leaf and flower of monocot and dicot plants. **Unit-III**

CONTENTS

Chapter No.	Chapter Name	Page No.
01	Matter in Our Surroundings <i>[Not a part of evaluation scheme of 2021-22]</i>	1
02	Is Matter Around Us Pure	23
03	Atoms and Molecules	50
04	Structure of the Atom	92
05	Fundamental Unit of Life	122
06	Tissues	144
07	Diversity in Living Organisms <i>[Not a part of evaluation scheme of 2021-22]</i>	168
08	Motion	203
09	Force and laws of motion	239
10	Gravitation	272
11	Work And Energy	304
12	Sound <i>[Not a part of evaluation scheme of 2021-22]</i>	337
13	Why Do We Fall ill	364
14	Natural Resources	385
15	Improvement in Food Resources <i>[Not a part of evaluation scheme of 2021-22]</i>	408

- Note:**
- *** mark represents *Textual Exercise question.*
 - #** mark represents *Intext question.*
 - ⌘** mark represents *NCERT Exemplar question.*
 - 🔥** symbol represents *HOT (Higher Order Thinking) question.*
 - Ⓜ** symbol represents *Topics/Subtopics/Questions that are not part of the rationalized syllabus for the Special Evaluation Scheme 2021-22.*

Content & Concepts

1.0 Introduction	1.3 States of Matter
1.1 Physical Nature of Matter	1.4 Can Matter Change its State?
1.2 Characteristics of Particles of Matter	1.5 Evaporation

[Note: Chapter 1 has been omitted from evaluation/examination for the academic year 2021-22.]

Tables of Key Questions: Following table would facilitate students to find out Questions of NCERT Textbook Exercise and Exemplar in our notes.

NCERT Exercise Questions					
NCERT Exercise Question No.	Target Notes		NCERT Exercise Question No.	Target Notes	
	Page No.	Question No.		Page No.	Question No.
1	13	7	6	7	4
2	13	10	7	11	9
3	13	11	8	11	12
4	6	14	9	14	6
5	15	7			

NCERT Exemplar Questions					
NCERT Exemplar Questions No.	Target Notes		NCERT Exemplar Questions No.	Target Notes	
	Page No.	Question No.		Page No.	Question No.
1	17	4	15	15	9
2	11	6	16	4	2
3	5	2	17	5	1
4	17	3	18	13	5
5	6	4	19	13	4
6	10	1	20	15	2
7	11	3	21	18	6
8	11	2	22	13	13
9	17	1	23	16	3
10	6	5	24	18	7
11	12	16	25	19	8
12	15	1	26	20	4
13	19	1	27	14	3
14	15	8			

1.0 Introduction

Matter: Anything around us which is made up of material that *occupies space* and has a mass is called matter. **E.g.** The food we eat, the air we breathe, food, stones, clouds, stars, etc.

Objective Questions [1 Mark]

Multiple Choice Questions

- Which of the following is NOT matter?

(A) Anger	(B) Food
(C) Stone	(D) Air



Very Short Answer Questions

2. On the basis of which five elements early Indian philosophers classified matter?

Ans: The five basic elements also called 'Panch Tatva' are air, earth, fire, sky and water.

3. Which of the following is/are matter(s)?
temperature, pressure, air, love, thoughts, density, ice

Ans: Air and ice

4. Which of the following are states of matter?
Milk, tree, speech, dream

Ans: Milk, tree

Short Answer Questions - Type I [2 Marks]

#1. Which of the following are matter?
Chair, air, love, smell, hate, almonds, thought, cold, lemon water, smell of perfume.

Ans:

- Chair, air, smell, almonds, lemon water and smell of perfume are matter.
- Love, hate, cold and thought are not matter.



CAUTION

Smell is matter because of the presence of some volatile substances in air which occupy space and have a mass.

2. Light is not considered matter. Explain.

Ans: Anything which occupies space and has a mass is called matter. Light neither occupies space nor has mass. Therefore, it is not considered as matter.

Short Answer Questions - Type II [3 Marks]

1. What is matter? Which of the following are matter?

Smoke, cold, cupboard, cold drink, smell of perfume, thought

Ans:

- Anything which occupies space and has a mass is called matter.
- Matter: smoke (gas), cupboard (solid), cold drink (liquid), smell of perfume (gas).

1.1 Physical Nature of Matter

- Matter is made up of extremely small particles which are not visible to naked eye.
- The smallest particle of matter cannot be divided further into smaller particles.



Connections

In chapter 3, you will study in details on the smallest particles of matters i.e., atoms and molecules.

Assertion & Reason

1. **Assertion :** A sugar cube when made into powdered form contains many tiny particles.
Reason : Matter is divisible as it is made up of many tiny particles.

- (A) Assertion is True, Reason is True; Reason is a correct explanation for Assertion.
(B) Assertion is True, Reason is True; Reason is not a correct explanation for Assertion.
(C) Assertion is True, Reason is False.
(D) Assertion is False, Reason is True.

Hint: Since, sugar cube occupies space and has a mass, it is matter and thus, it is can be divided into many small particles.

2. **Assertion :** Just a few crystals of potassium permanganate can colour a large volume of water.

Reason : There must be millions of tiny particles in just one crystal of potassium permanganate.

- (A) Assertion is True, Reason is True; Reason is a correct explanation for Assertion.
(B) Assertion is True, Reason is True; Reason is not a correct explanation for Assertion.
(C) Assertion is True, Reason is False.
(D) Assertion is False, Reason is True.

Hint: Just a few crystals of potassium permanganate can colour a large volume of water (about 1000 L). So we conclude that there must be millions of tiny particles in just one crystal of potassium permanganate, which keep on dividing themselves into smaller and smaller particles.

Very Short Answer Questions

3. The smell of dettol solution can be detected even after repeated dilution. What does it indicate?

Ans: It indicates that matter is made up of extremely small particles.

**Short Answer Questions - Type I [2 Marks]**

1. The colour of potassium permanganate solution persists even after repeated dilution. Explain.

Ans:

- Only few crystals of potassium permanganate can colour the large amount of water.
- The number of particles of potassium permanganate decreases at each stage of dilution, but there are still enough particles to persist the colour.
- Hence, the colour of potassium permanganate solution persists even after repeated dilution.

1.2 Characteristics of Particles of Matter

- Particles of matter have space between them. For example, when sugar is added to water, sugar molecules get in to the spaces between the water molecules.
- Particles of matter are in continuous state of motion. Due to this continuous motion, particles possess kinetic energy. Kinetic energy increases with increase in temperature. Particles with higher kinetic energy move faster.
- Particles of matter intermix on their own with each other. They do so by getting into the spaces between the particles. This intermixing of particles of two different types of matter on their own is called diffusion. We also observe that on heating, diffusion becomes faster.
- Particles of matter are attracted to each other with a force called intermolecular force. Smaller the space between the particles (intermolecular distance), greater is the intermolecular force.

Objective Questions [1 Mark]**Multiple Choice Questions**

- As the temperature increases, _____.
 - particles move faster
 - kinetic energy of the particles also increases.
 - Both (A) and (B)**
 - nether (A) not (B)
- Which of the following is/are CORRECT statement(s)?
 - Particles of matter are continuously moving.
 - Particles of matter intermix on their own with each other.

- Particles of matter have force acting between them.
- All of these**

**Connections**

In chapter 2, you will study in details on types of matters; pure substance and mixture.

Assertion & Reason

- Assertion:** Chocolate milkshake cannot be made by mixing choco syrup with milk.
Reason: Particles of matter have space between them and thus, particles of choco syrup get into the spaces between milk particles.

- Assertion is True, Reason is True; Reason is a correct explanation for Assertion.
- Assertion is True, Reason is True; Reason is not a correct explanation for Assertion.
- Assertion is True, Reason is False.
- Assertion is False, Reason is True.**

Hint: As particles of choco syrup can get into the spaces between milk particles, it is possible to make chocolate milkshake by mixing choco syrup with milk.

- Assertion:** Baking soda dissolves faster in boiling water than in cold water.
Reason: On increasing the temperature, particles of the matter move faster. Hence, the process of dissolution becomes faster.

- Assertion is True, Reason is True; Reason is a correct explanation for Assertion.**
- Assertion is True, Reason is True; Reason is not a correct explanation for Assertion.
- Assertion is True, Reason is False.
- Assertion is False, Reason is True.

Hint: Water molecules in boiling water possess kinetic energy. Therefore, they breakdown baking soda particles into ions much faster as compound to molecules of cold water.

Very Short Answer Questions

- Dettol, or potassium permanganate gets evenly distributed in water. Which property of matter does this observation show?**

Ans: This shows that the particles of matter have spaces between them.

- Why are particles of matter continuously moving?**

Ans: Particles of matter possess kinetic energy. Therefore, they are in continuous random motion.



7. What is diffusion?

Ans: The phenomenon of *intermixing of particles* of two different kinds of matter on their own is called diffusion.

Enrich Your Knowledge

Diffusion of gases is very fast. This is because the particles in gases move very quickly in all directions. The rate of diffusion of a gas, however, depends on its density. Light gases diffuse faster than heavy gases.

8. Why is the rate of diffusion of liquid higher than that of solid?

Ans: In a liquid state, the particles have *greater spaces between* them as compared to particles in a solid state. Therefore, particles of liquid move freely.

#9. A diver is able to cut through water in a swimming pool. Which property of matter does this observation show?

Ans: This shows that the particles of matter *have spaces between them*.



Reading between the lines

This also shows that intermolecular forces of attraction between water particles are not very strong and hence, a diver is easily able to cut through water in a swimming pool.

Short Answer Questions - Type I [2 Marks]

1. Which of the following will diffuse faster in water? Why? Honey, red ink

Ans: Red ink will diffuse faster because the density of ink is close to water whereas the *density of honey is quite high* as compared to water. Therefore, honey doesn't diffuse in water but it moves towards to bottom of water.

#2. 'Osmosis is a special kind of diffusion'. Comment.

Ans:

- Osmosis and diffusion both involve movement of particles from the region of higher concentration to the region of lower concentration.
- However, in osmosis, solvent moves through a semi permeable membrane. It does not allow the movement of solute.
- Hence, osmosis is a special kind of diffusion.

3. We get the smell of perfume sitting several meters away. Explain.

Ans: The volatile particles of perfume carry pleasant smelling vapours. *Vapour rapidly diffuses in air and reaches several meters away*. Therefore, we get the smell of perfume sitting several meters away.

#4. Give reasons for the following observation: The smell of hot sizzling food reaches you several metres away, but to get the smell from cold food you have to go close.

Ans:

- The rate of diffusion of particles in air depends on temperature.
- The *rate of diffusion of solid particles in air increases with increase in temperature* due to increase in kinetic energy of solid particles.
- Therefore, the smell of hot sizzling food reaches us several meters away but to get the smell from cold food we have to go close.

5. Why can you smell the perfume of burning incense stick at several metres away?

Ans:

- The rate of diffusion of particles in air depends on temperature.
- The *rate of diffusion of particles of incense stick in air increases with increase in temperature* due to increase in kinetic energy of particles.
- Therefore, we can smell the perfume of burning incense stick at several metres away.

#6. What are the characteristics of particles of matter?

Ans:

- Particles of matter have *spaces between them*.
- Particles of matter are in *continuous motion*.
- Particles of matter *attract each other*.

Short Answer Questions - Type II [3 Marks]

- A gas jar containing air is placed upside down on a gas jar of bromine vapour. It is observed that after some time, the gas jar containing air also becomes completely reddish brown.
 - Explain why this happens.
 - Name the process involved.
 - A smell of dettol solution can be detected even after repeated dilution. What does it indicate?

**Ans:**

- i. a. The reddish brown bromine vapours spread out into the jar containing air. Therefore, the gas jar containing air becomes completely reddish brown due to the intermixing of particles of different gases on their own.
- b. Diffusion
- ii. This shows that the matter is made up of very small particles.

Long Answer Questions [5 Marks]

- ⌘1. Classify the following into osmosis/diffusion
- i. Swelling up of a raisin on keeping in water.
 - ii. Spreading of virus on sneezing.
 - iii. Earthworm dying on coming in contact with common salt.

- iv. Shrinking of grapes kept in thick sugar syrup.
- v. Preserving pickles in salt.
- vi. Spreading of smell of cake being baked through out the house.
- vii. Aquatic animals using oxygen dissolved in water during respiration.

Ans:

- | | |
|----------------|---------------|
| i. Osmosis | ii. Diffusion |
| iii. Osmosis | iv. Osmosis |
| v. Osmosis | vi. Diffusion |
| vii. Diffusion | |

1.3 States of Matter

Property	Solids	Liquids	Gases
Shape	Definite shape	No fixed shape. They take up the shape of container in which they are stored.	No definite shape. They take up the shape of container in which they are stored.
Volume	Definite volume	Definite volume	No definite volume. They acquire volume of container in which they are stored.
Compressibility	Negligible compressibility	Negligible compressibility	Highly compressible
Rigidity	Rigid	Not rigid	Not rigid
Boundary	Definite boundary	No definite boundary	No definite boundary
Intermolecular forces	Maximum	Intermediate	Minimum
Kinetic energy	Minimum	Intermediate	Maximum

GG - Gyan Guru**Gases exerts pressure on the walls of its container**

When we blow air into a balloon, the air particles (gas particles) push the balloon walls from inside and exert pressure on them. This air pressure causes the balloon to inflate. Thus, a gas exerts pressure on the walls of its container.

**Objective Questions [1 Mark]****Multiple Choice Questions**

1. Which of the following is not the property of a solid?
 - (A) Fixed volume
 - (B) Fixed boundary
 - (C) **Non-rigid**
 - (D) Negligible compressibility

- ⌘2. The property to flow is unique to fluids. Which one of the following statements is correct?
 - (A) Only gases behave like fluids
 - (B) Gases and solids behave like fluids
 - (C) **Gases and liquids behave like fluids**
 - (D) Only liquids are fluids
3. Which of the following statements is INCORRECT?
 - (A) Spaces between the particles of a liquid are larger than the particles of solid.

Page no. **6** to **19** are purposely left blank.

To see complete chapter buy **Target Notes** or **Target E-Notes**



3. Give reasons for the following:
- A liquid generally flows easily.
 - Ice at 0°C appears colder to the mouth than water at 0°C . Why?
 - Doctors advise to put strips of wet cloth on the forehead of a person having high temperature.

Ans:

- Particles of a liquid have greater spaces between them as compared to particles of a solid. They can slide over one another due to weak forces of attraction. Thus, a liquid generally flows easily.
- Particles in water at 0°C contain additional latent heat of fusion. Therefore, particles in ice at 0°C have lower energy than the particles of water at 0°C . Hence, ice at 0°C appears colder to the mouth than water at 0°C .
- Particles of water from wet clothes absorb energy from the body and evaporate. As a result, the body gets cooler. Hence, doctors advise to put strips of wet cloth on the forehead of a person having high temperature (fever).

4. Comment on the following statements:

- Evaporation produces cooling.
- Rate of evaporation of an aqueous solution decreases with increase in humidity.
- Sponge though compressible is a solid.

Ans:

- During evaporation, the high energetic particles of a liquid are escaped in the air. Therefore, the particles of liquid absorb energy from the surroundings to compensate the energy loss. As a result, the surroundings get cooler.
- Humidity is the amount of water present in the surroundings. The surroundings cannot hold more than specific amount of water. Therefore, when humidity is high, the rate of evaporation of aqueous solution decreases.

- Sponge contains pores in which the air is trapped. Therefore, sponge is not rigid. When we apply pressure on sponge, the air is expelled and it gets compressed to a state of matter which has definite shape and volume. Therefore, sponge is compressible but is a solid.

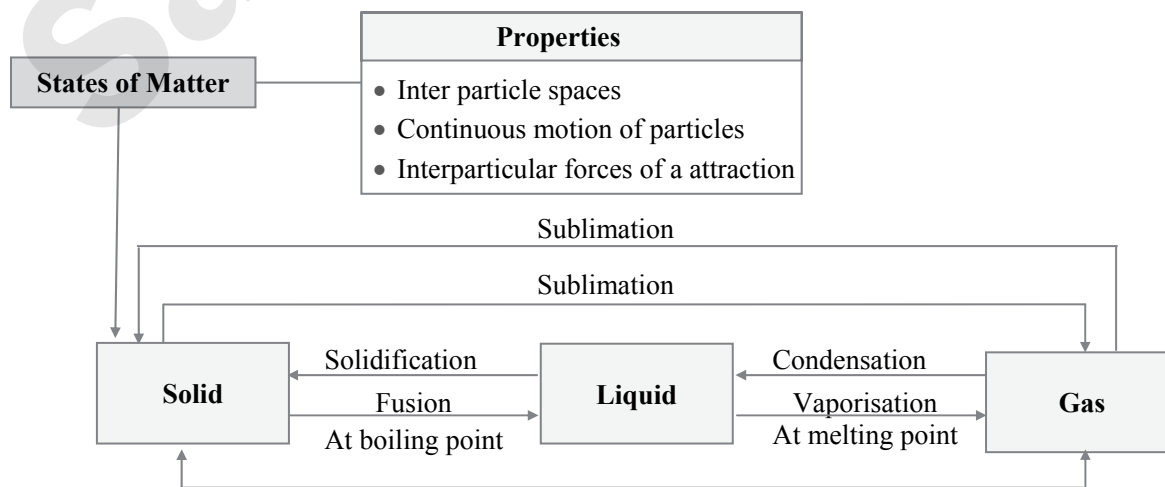
5.

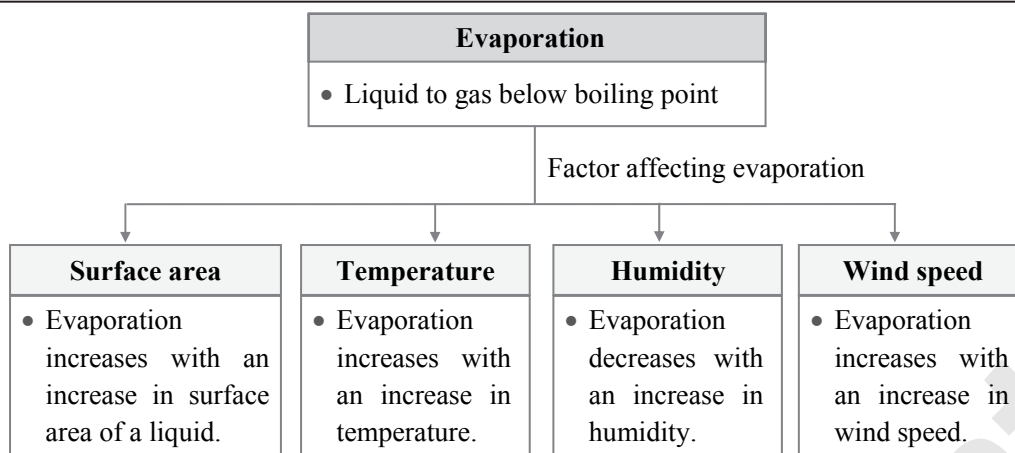
- Define boiling point and evaporation.
- List two factors on which boiling of a liquid depends.
- How is Bose-Einstein Condensate formed?

Ans:

- Boiling point:**
The temperature at which a *liquid boils to convert into a gas* at atmospheric pressure is called boiling point.
 - Evaporation:**
Evaporation is the surface phenomenon in which a liquid changes into vapour at any temperature below its boiling point.
- Boiling point increases with increase in pressure. When pressure is applied, the particles of liquid come closer. Hence, more energy is required to break apart the particles.
 - Boiling point increases in presence of impurities. This is because particles of impurities replace particles of liquid at the surface. Therefore, less numbers of particles are available to vaporise. Hence, boiling point increases in presence of impurities.
- Bose-Einstein Condensate is formed by cooling a gas of extremely low density (about 100000^{th} density of normal air) to super low temperatures.

Memory Maps



**Chapter Assessment****Total Marks: 20**

1. Which of the following has the lowest density? [1]
(A) Sugar (B) Ice (C) Water (D) Iron
2. Which of the following substance undergoes sublimation? [1]
(A) Ice (B) Naphtalene (C) Acetone (D) Sugar
3. Name the fourth and fifth states of matter. [1]
4. Read the following and answer any four questions from 4 (i) to 4 (v). [4]
During evaporation, the high energetic particles of a liquid are escaped in the air. Therefore, the particles of liquid absorb energy from the surroundings to compensate the energy lost during evaporation. As a result, the surroundings get cooler.
 - i. The rate of evaporation increases with _____.
(A) an increase in wind speed (B) an increase in temperature of a liquid
(C) a decrease in humidity (D) all of these
 - ii. The rate of evaporation increases with _____.
(A) decrease in the temperature of the surroundings
(B) increase in humidity
(C) increase in surface area
(D) decrease in surface area
 - iii. Evaporation takes place _____.
(A) at any temperature above boiling point (B) at any temperature below boiling point
(C) at boiling point (D) at melting point
 - iv. Evaporation is known as _____.
(A) surface phenomenon (B) bulk phenomenon
(C) both surface as well bulk phenomena (D) neither surface nor bulk phenomena
 - v. Why do people sprinkle water on the roof or the open ground in summer?
5. Give reasons for the following:
 - i. Clothes dry faster on a windy day.
 - ii. Smell of perfume travels several meters away. [2]



6. Classify the following into osmosis/diffusion
- Swelling up of a raisin on keeping in water.
 - Spreading of virus on sneezing.
 - Earthworm dying on coming in contact with common salt.

[3]

OR

What is the physical state of water at

- 25 °C
- 0 °C
- 100 °C.

7. Nisha got drenched in the rain. Her friend Sapna asked her to spread the wet clothes under fan in order to dry faster.

- How does spreading wet clothes under fan help to dry faster?
- Name one more way to dry the wet clothes faster.
- Why does our palm feel cold when we put some acetone or petrol or perfume on it?

[3]

- 8.
- Define boiling point and evaporation.
 - List two factors on which boiling of a liquid depends.
 - How is Bose-Einstein Condensate formed?

[5]

OR

Compare in tabular form the properties of solids, liquids and gases with respect to:

- | | |
|-------------------------|---------------|
| i. Shape | ii. Volume |
| iii. Compressibility | iv. Diffusion |
| v. Fluidity or Rigidity | |

Download the following by scanning the given **Q.R. Code**

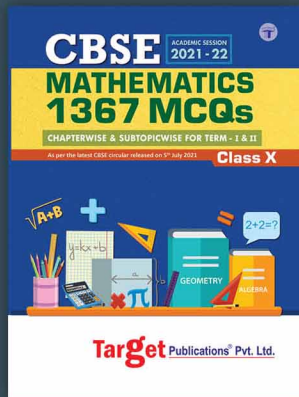
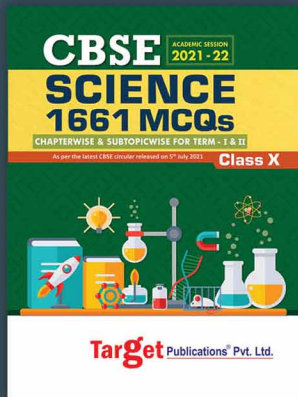
- Solutions of Textbook activities
- Formative Assessment and Solutions
- Answers to Chapter Assessment



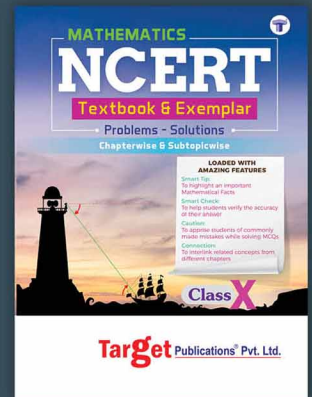
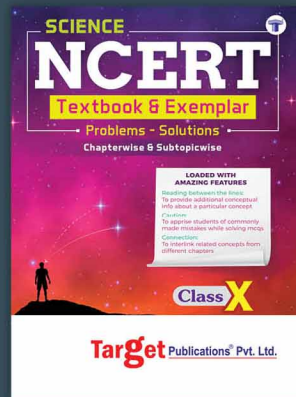


AVAILABLE BOOKS FOR CLASS X :

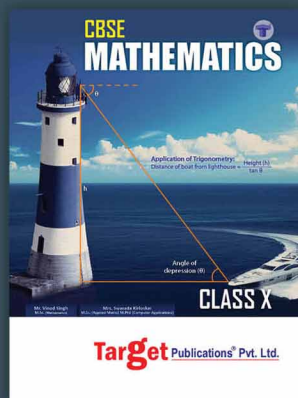
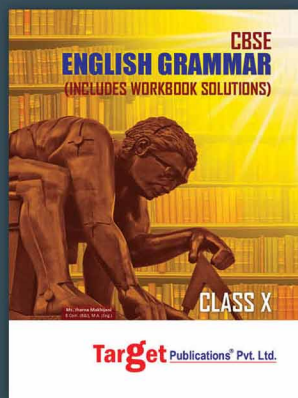
CBSE (MCQs)



NCERT TEXTBOOK & EXEMPLAR



CBSE NOTES



Scan the QR code to buy e-book version of Target's Notes on Quill - The Padhai App



Visit Our Website

Target Publications® Pvt. Ltd.

Transforming lives through learning.

Address:

2nd floor, Aroto Industrial Premises CHS,
Above Surya Eye Hospital, 63-A, P. K. Road,
Mulund (W), Mumbai 400 080

Tel: 88799 39712 / 13 / 14 / 15

Website: www.targetpublications.org

Email: mail@targetpublications.org



Explore our range of **STATIONERY**

