CBSE IX Second Term

Me 'n' Mine™

Science

(Pullout Worksheets)

SALIENT FEATURES

- Chapterwise and Topicwise Summative & Formative Assessments with study material.
- Chapter Test at the end of each chapter.
- Five Practice Papers with space for writing answers (Based on latest CBSE guidelines)

Based on CCE Scheme

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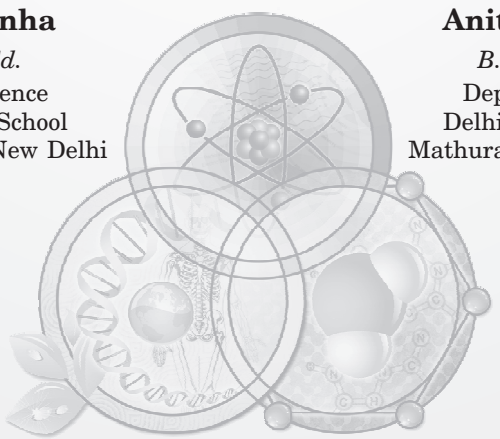

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PUBLISHERS' NOTE

We are glad to present a set of two books of *Me 'n' Mine* Science designed termwise for Class IX students in accordance with the **Continuous and Comprehensive Evaluation (CCE)** guidelines issued by the CBSE.

This invaluable *Me 'n' Mine* series also provides practice material based on CCE guidelines for English (Communicative), Hindi (Course 'A'), Hindi (Course 'B'), Mathematics, Social Science and Sanskrit also.

Salient features of this book are:

- Chapterwise and Topicwise Summative & Formative Assessments with study material.
- Plenty of sectionwise, chapterwise and topicwise Pullout Worksheets. These worksheets have variety of questions such as MCQs, very short answer, short answer, long answer, value based and practical based questions based on latest CBSE guidelines.

Suggestions from readers are most welcome.

Wish you all the best and expect to meet and greet you in next class next year.

Syllabus

General Instructions:

1. The units specified for each term shall be assessed through both Formative and Summative Assessments.
2. In each term, there will be two Formative Assessments each carrying 10% weightage.
3. The Summative Assessment in each term will carry 30% weightage.
4. Hands on Practical examination will be conducted through Formative Assessment in every term with 20% weightage of total term marks.
5. Assessment of Practical Skills through Practical Based Questions (PBQ) will carry 15 marks in every term end Summative Assessment.

COURSE STRUCTURE

FIRST TERM

Units	Marks
I. Matter—Its Nature and Behaviour	29
II. Organisation in the Living World	18
III. Motion, Force and Work	30
IV. Food; Food Production	13
TOTAL	**90**

Theme: Materials **(22 Periods)**

Unit: 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. Heterogenous and homogenous mixtures, colloids and suspensions.

Theme: The World of The Living **(22 Periods)**

Unit: 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).

Theme: Moving Things, People and Ideas **(36 Periods)**

Unit: 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, Inertia of a body, Inertia and mass, Momentum, Force and Acceleration. Elementary idea of conservation of Momentum, Action and Reaction forces.

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

Theme: Food **(10 Periods)**

Unit: Food Production

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

PRACTICALS

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

1. To test (*a*) the presence of starch in the given food sample (*b*) the presence of the adulterant metanil yellow in dal.
2. To prepare
   (*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.
3. To prepare
   (*a*) a mixture
   (*b*) a compound

   using iron filings and sulphur powder and distinguish 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.
4. To carry out the following reactions and classify them as physical or chemical changes.
   (*a*) Iron with copper sulphate solution in water
   (*b*) Burning of magnesium in air
   (*c*) Zinc with dilute sulphuric acid
   (*d*) Heating of copper sulphate
   (*e*) Sodium sulphate with barium chloride in the form of their solutions in water.
5. To prepare stained temporary mounts of (a) onion peel and (b) human cheek cells and to record observations and draw their labelled diagrams.
6. To identify parenchyma and sclerenchyma tissues in plants, striped muscle fibres and nerve cells in animals, from prepared slides and to draw their labelled diagrams.
7. To separate the components of a mixture of sand, common salt and ammonium chloride (or camphor) by sublimation.
8. To determine the melting point of ice and the boiling point of water.
9. To establish relationship between weight of a rectangular wooden block lying on a horizontal table and the minimum force required to just move it using a spring balance.
10. To determine the mass percentage of water imbibed by raisins.

COURSE STRUCTURE

SECOND TERM

Units	Marks
I. Matter—Its Nature and Behaviour	18
II. Organisation in the Living World	26
III. Motion, Force and Work	36
IV. Our Environment	10
TOTAL	**90**

Note: The material for Open Text Based Assessment **(OTBA)** for SA-II will be from Unit - IV: Our Environment. This unit will be tested through **OTBA** only.

Theme: Materials **(28 Periods)**

Unit: Matter—Nature and Behaviour

Particle nature, 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. Valency. Chemical formula of common compounds.

Structure of atom: Electrons, protons and neutrons; Isotopes and isobars.

Theme: The World of the Living **(23 Periods)**

Unit: Organization in the living World

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, Thallophyte, 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 **(24 Periods)**

Unit: Motion, force and work

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 **(15 Periods)**

Unit: 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.
Biogeochemical cycles in nature: water, oxygen, carbon, nitrogen.

PRACTICALS

Practical should be conducted alongside the concepts taught in theory classes

1. To verify laws of reflection of sound.
2. To determine the density of solid (denser than water) by using a spring balance and a measuring cylinder.
3. To establish the relation between the loss in weight of a solid when fully immersed in
   (*a*) tap water
   (*b*) strongly salty water, with the weight of water displaced by it by taking at least two different solids.
4. To observe and compare the pressure exerted by a solid iron cuboid on fine sand/ wheat flour while resting on its three different faces and to calculate the pressure exerted in the three different cases.
5. To determine the velocity of a pulse propagated through a stretched string/slinky.
6. To study the characteristic 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.
7. To 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.
   (*b*) one adaptive feature with reference to its habitat.
8. To verify the law of conservation of mass in a chemical reaction.
9. To study the external features of root, stem, leaf and flower of monocot and dicot plants.
10. To study the life cycle of mosquito.

CONTENTS

PHYSICS

CHEMISTRY

BIOLOGY

Note. *Unit IV: Our Environment will be tested through OTBA only.*

PHYSICS

PULLOUT WORKSHEETS

1 FLOATATION

Study Material

- **Pressure:** If a force F acting perpendicularly on a surface is uniformly distributed over the area, the pressure is force/area. The SI unit of pressure is pascal (Pa).
- **Buoyancy:** When a solid is partially or completely immersed in a fluid (liquid or gas), it exerts an upward force on the solid. This force is called **force of buoyancy, buoyant force or upthrust.**
- **Archimedes' principle:** When a solid body is partially or completely immersed in a fluid, it exerts an upward force on the body, whose magnitude is equal to the weight of the displaced fluid.
- **Floatation:** A solid floats in a liquid if the force of buoyancy has the same magnitude as the weight of the floating body.
- Objects having density less than that of the liquid in which they are immersed, float on the surface of the liquid. If the density of the object is more than the density of the liquid in which it is immersed, then it sinks in the liquid.
- Force acting perpendicular to the surface of a body is called thrust. Its unit is same as that of force.
- When area on which a force acts is increased, pressure decreases. For example, foundation of buildings, dams.
- When we lift an object inside a liquid, due to buoyant force we have to apply lesser force.
- Hydrogen filled balloon rises, due to buoyant force only.
- Lactometer, the instrument used to determine purity of sample of milk, is also based on Archimedes' principle.
- Relative density of a substance is the ratio of density of substance to the density of water. It is a unitless quantity.
- If relative density of a substance is less than 1, it will float in water.

1 FLOATATION

WORKSHEET–1

Name	Class	Roll No.	Time 20 Min.	Max. Marks 14	Marks Obtained

ANSWER THE FOLLOWING:

1. **What do you mean by buoyancy?** [*NCERT*] **1**

Ans. .....

2. **In what direction does the buoyant force on an object immersed in a liquidact?** [*NCERT*] **1**

Ans. .....

3. **Why does a block of plastic released underwater come up to the surface of water?** [*NCERT*] **1**

Ans. .....

4. **Why does a truck or a motor bus have much wider tyres?** **1**

Ans. .....

5. **An army tank weighing more than hundred tonnes moves conveniently even on the earthen road. How?** **1**

Ans. .....

6. **The cutting edge of a knife should be as sharp as possible. Why?** **1**

Ans. .....

7. **How does a balloon filled with hydrogen gas rise upwards?** **1**

Ans. .....

8. **A steel block sinks in water but floats in mercury. Why?** **1**

Ans. .....

9. **Why is a slight blow on a cork of bottle fully filled with a liquid sufficient to break the bottle?** **2**

Ans. .....

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10. **Explain why a wide steel belt is provided over the wheels of an army tank.** **2**

Ans. .....

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11. **Why is the pressure on the ground more when a man is walking than when he is standing?** **2**

Ans. .....

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1 FLOATATION

WORKSHEET–2

Name	Class	Roll No.	Time 40 Min.	Max. Marks 26	Marks Obtained

ANSWER THE FOLLOWING:

1. **Why is it easier to swim in sea water than in river water?** **2**

Ans. .....

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2. **Why is it difficult to hold a school bag having a strap made of a thin and strong string?** [*NCERT*] **2**

Ans. .....

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3. **Why does an object float or sink when placed on the surface of water?** [*NCERT*] **2**

Ans. .....

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4. **You have a bag of cotton and an iron bar, each indicating a mass of 100 kg when measured on a weighing machine. In reality, one is heavier than other. Can you say which one is heavier and why?** [*NCERT*] **2**

Ans. .....

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5. **It is easier to press a pin having sharp tip rather than a pin with blunt tip. Why?** **2**

Ans. .....

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6. **A sharp blade is more effective in cutting an object than a blunt blade. Explain, why.** **2**

Ans. .....

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SUMMATIVE ASSESSMENT

7. Why do you prefer a broad and thick handle for your suitcase? **2**

Ans. .....

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8. Why are railway tracks laid on large-sized concrete sleepers? **2**

Ans. .....

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9. We cannot walk comfortably on sand but camel can run in a desert easily. Explain the reason in brief. **2**

Ans. .....

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10. Shoes with a broad sole but without heel are more comfortable to wear. Why? **2**

Ans. .....

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11. Do fluids also exert pressure? How is pressure transmitted in a fluid? **2**

Ans. .....

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12. Give some important applications of Archimedes' principle? **2**

Ans. .....

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13. Swimmers are provided with an inflated rubber jacket. Why? **2**

Ans. .....

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