

iv. (a) Mathematics & Science
Class – VI Mathematics

Topic	Content	Expected Learning Outcomes	Mode of Transaction
I. Number System	<ul style="list-style-type: none"> • Numbers up to 8-digits • Place value and comparison • Whole numbers • Test of divisibility for 2,3,4,5,6,8,9,10, 11 • Factorization • Prime number • LCM & HCF • Integers • Revision : Fraction and Decimal numbers • Conversion : Decimal to Fraction • Addition & Subtraction of decimal numbers 	<ul style="list-style-type: none"> • To understand the concepts of numbers (up to 8 digits), number names and numerals; • Able to identify place value in eight digit numbers • To expand numbers with respect to place value. • Able to identify smaller/ larger numbers. • To compare numbers using $<$, $>$ or $=$ symbols and also arranges numbers in ascending / descending order. • To understand the number line and locate numbers on it (smaller number 	<ul style="list-style-type: none"> • Place Value through pattern • Observation Method • Estimation through real life Examples • Induction method • Divisors through patens • Multiples through observations • Divisibility conditions through patens • G.C.D. and L.C.D. through examples • Equivalent fractions through multiple cards • Addition Subtraction and Comparison of fractions through pictorial representation

Topic	Content	Expected Learning Outcomes	Mode of Transaction
		<p>only)</p> <ul style="list-style-type: none"> • Able to perform the four fundamental operations (answers not to exceed six digits) and applies the right operation in word problems. • To understand natural numbers and the necessity to extend natural numbers to whole numbers. • To represent whole numbers on number line. • To understand the four properties of numbers as patterns without emphasis on terminology (closure, commutative, associative, distributive properties over addition and 	<ul style="list-style-type: none"> • fractions on number line through activities • decimals through pictorial representation • representation of decimals on number line • understanding of integers through realized situation • representing integers on number line • Addition and subtraction of integers through play way method.

Topic	Content	Expected Learning Outcomes	Mode of Transaction
		<p>multiplication) additive identity, multiplicative identity of numbers.</p> <ul style="list-style-type: none"> • Able to identify and appreciate number patterns- triangular numbers and square numbers. • To recall the concepts of factors and multiples with the aid of multiplication tables of factors up to 10 • To understand the rules of the divisibility test and apply it to numbers (divisibility tests for 2, 3, 4, 5, 6, 8, 9, 10, 11) • To recall the classification of even and odd numbers. • To understand 	

Topic	Content	Expected Learning Outcomes	Mode of Transaction
		<p>the classification of prime, composite and co – prime numbers.</p> <ul style="list-style-type: none"> • To learn prime factorization of a given number and express it as a product of prime numbers. • To factorize two digit numbers. • To understand the method of finding HCF and LCM (by prime factorization method and division method). • To learn to deduce the relationship between HCF, LCM and the two numbers. • To understand the necessity for extension of whole numbers to negative integers. • To understand 	

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		<p>that the collection of positive integers, negative integers and zero forms integers.</p> <ul style="list-style-type: none"> • To represent integers on number line and understand the difference between the number rays of \mathbb{N} and \mathbb{W} • To compare integers and arrange them in ascending / descending order. • To add and subtract integers using number line and real life situation. • To recall that a fraction is a part of a whole. • To represent fractions pictorially on number line, understanding the difference from the integer 	

Topic	Content	Expected Learning Outcomes	Mode of Transaction
		<p>number line</p> <ul style="list-style-type: none"> • To be able to identify different kinds of fractions – proper, improper and mixed fractions • Able to convert a fraction into an equivalent fraction; and reduces fraction to the lowest term. • To compare fractions with unlike denominators up to 10. • To add and subtract fractions of unlike denominators up to 10. • To learn the concept of decimals using place value notation. • To learn the concept of decimals as 	

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		fractions with denominators of tens and its multiples. <ul style="list-style-type: none"> • To be able to convert fractional numbers into decimals and vice – versa. • To add and subtract decimal fractions. • Able to apply the appropriate operation in word problems- addition and subtraction of decimals. 	
II. Measurements	<ul style="list-style-type: none"> • Metric Measures • Revision of Length, weight, volume. • Measure of Time from seconds to minutes, hours, week, year & leap year • Perimeter and Area of rectangle, right angle triangle. 	<ul style="list-style-type: none"> • To recall the conversion of units of length, weight and volume restricting to the units mentioned below. (km, m, cm, mm and similarly units that are in common use in weight and volume) • Able to find the 	<ul style="list-style-type: none"> • Understanding the concept of metric measures through experiments • Observation method • Finding perimeter and area by using dot paper and grid papers

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		<p>duration between two time instances.</p> <ul style="list-style-type: none"> • Able to identify leap years. • Able to convert from one unit of time to the other – seconds to minutes and hours and vice – versa, days to weeks, years, leap year and vice – versa. • To understand the concept of area and perimeter of plane figures. • To calculate the perimeter and area of square, rectangle, right triangle. 	
III. Algebra	<ul style="list-style-type: none"> • Introduction to Algebra 	<ul style="list-style-type: none"> • Introduction to variable through patterns and through appropriate word problems and generalizations. 	<ul style="list-style-type: none"> • Introducing variable and constants through patens • Solving simple equation

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		<ul style="list-style-type: none"> • To generate such patterns with more examples. • To solve unknowns through examples with simple contexts (single operations). 	<p>through trial and error method</p> <p>Forming puzzles through group activities</p>
IV. Life Mathematics	<ul style="list-style-type: none"> • Ratio and Proportion 	<ul style="list-style-type: none"> • To understand the concept of Ratio • To understand that Proportion is same as the ratio of two. • Able to calculate the needed quantity using Unitary method (with only direct variation implied). 	<ul style="list-style-type: none"> • Understating the concept of ratios through real life situation • Solving direct variation problem through life oriented examples
V. Geometry	<ul style="list-style-type: none"> • Introduction to point , line, ray , segment and planes • Properties of collinear , 	<ul style="list-style-type: none"> • To understand certain Fundamental geometrical terms - points, lines, 	<ul style="list-style-type: none"> • Demonstratio n method • Learning by doing method

Topic	Content	Expected Learning Outcomes	Mode of Transaction
	<p>concurrency , parallel, perpendicular lines</p> <ul style="list-style-type: none"> • Kinds of angles • Types of Triangle 	<p>rays, segments and planes.</p> <ul style="list-style-type: none"> • Able to recognize collinear points, intersecting lines, concurrent lines, point of intersection, point of concurrency, parallel lines and perpendicular lines. • To understand the concept of angles. • Able to identify angles, vertex, arms. • Able to measure angles and identify kinds of angles – right angle, acute angle 	

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		<p>obtuse angle.</p> <ul style="list-style-type: none"> • To understand complementary & supplementary angles and find complementary and supplementary angles for the given angles. • Able to recognize different kinds of triangles based on (a) length of sides (b) measures of angles. 	
VI. Data handling	<ul style="list-style-type: none"> • Pictograph • Bar graph 	<ul style="list-style-type: none"> • To understand the necessity to collect data. • To organize the collected discrete data using tally marks and a 	<ul style="list-style-type: none"> • Use available data in the class room • Project method

Topic	Content	Expected Learning Outcomes	Mode of Transaction
		<p>table.</p> <ul style="list-style-type: none"> • To recall to construct and interpret a pictograph stressing on the importance of the need for scaling. • Able to interpret data from bar graphs. • Able to construct bar graphs from the given data. 	
VII. Practical Geometry	<ul style="list-style-type: none"> • Introduction to Geometrical instruments • Drawing and measuring line segments. 	<ul style="list-style-type: none"> • To identify Geometrical instruments. • Able to measure and draw line segments. • Able to measure angles and draw angles using protractor - 0° - 180°. • Able to construct parallel and perpendicular lines using set square. • Able to identify different kinds 	<ul style="list-style-type: none"> • Learning by doing method

Topic	Content	Expected Learning Outcomes	Mode of Transaction
		of angles and lines from the given figures.	

Class – VII Mathematics

Topic	Content	Expected Learning Outcomes	Mode of Transaction
I. Real Number System	<ul style="list-style-type: none"> • Revision: Integers. Addition and subtraction on integers. • Introduction of multiplication and division on integers. • Properties of Integers • Introduction to rational numbers • Representation of rational numbers on number line. • Four basic operations on rational numbers • Fractions and Decimal Fractions • Powers 	<ul style="list-style-type: none"> • To recall the concepts of addition and subtraction of integers. • Able to multiply and divide integers • To understand that division by zero is meaningless. • To understand the four properties of integers (closure, commutative, associative, distributive properties over addition and multiplication), additive identity of integers, multiplicative identity of integers. • To understand that the above mentioned properties do not hold for subtraction and division of integers. • Able to perform the four fundamental operations on integers and applies appropriate operations in word problems. • To recall addition and subtraction of fractions. • Able to multiply fractions. • To understand fraction as an operator • To find the reciprocal of a fraction. • To learn to divide a fraction by another fraction. 	<ul style="list-style-type: none"> • To introduce the operations through number line • Tell how inadequacy of whole numbers leads to integers and fractions. • Mark the fractions on the number line. • To find a rational number in between two rational numbers • To understand the laws of exponents

		<ul style="list-style-type: none"> • Able to solve word problems that involve fractions (including mixed fractions). • To understand the necessity for extending fractions to rational numbers. • To represent rational number on number line. • To learn to perform all four operations on rational numbers. 	
II. Algebra	<ul style="list-style-type: none"> • Algebraic Expressions • Addition and Subtraction on expressions • Formation of simple expressions with two variables • Solving simple linear equations in one variable 	<ul style="list-style-type: none"> • Able to identify constants and variables in a given term of an algebraic expression and coefficients of the terms. • Able to identify into like and unlike terms. • To learn to write the degree of expressions like x^2y etc. (exponent < 3, number of variables is 2) • Able to form simple expressions with two variables. • Able to add and subtract algebraic expressions (coefficients should be integers). • To solve simple linear equations in one variable (in contextual problems) with two 	<ul style="list-style-type: none"> • Introduce expressions in I degree and II degree • Starting from the models $x+a = b$, $ax = b$, proceed $ax + b = c$ and $ax + b = cx + d$

		<p>operations (avoid complicated coefficients).</p> <ul style="list-style-type: none"> • Able to solve word problems involving rational numbers (all operations). • To represent rational number as a decimal. • To recall addition and subtraction of decimals. • To multiply and divide decimal fractions. • Able to solve word problems based on decimal fractions (all operations). • Able to express a given number in exponential form (exponents – only natural numbers) • To understand the laws of Exponents (through observing patterns and arrives at generalization.) • $a^m a^n = a^{m+n}$ where $m, n \in \mathbb{N}$ • $(a^m)^n = a^{mn}$ where $m, n \in \mathbb{N}$ • $\frac{a^m}{a^n} = a^{m-n}$ Where 	
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		$m, n! N, m > n$.	
Topic	Content	Expected Learning Outcomes	Mode of Transaction
III. Life Mathematics	<ul style="list-style-type: none"> • Ratio and Proportion • Indirect and Direct variation • Fraction and decimal into percentage • Solving word problem based on percentage • Profit and Loss • Simple Interest 	<ul style="list-style-type: none"> • To recall the concept of ratio and proportion. • Able to differentiate direct and indirect variation and calculate the needed quantity using direct and indirect variation. • To understand percentage as a fraction with denominator 100. • Able to convert fractions and decimals into percentages and vice-versa. • To solve word problems based on percentage. • To understand the concept of profit and loss (single transaction only). • Able to calculate simple interest. 	<ul style="list-style-type: none"> • Time and work, time and distance sharing problems etc. • Collect details of profit and loss. Explain the difference between profit and loss.

<p>IV. Measurements</p>	<ul style="list-style-type: none"> • Circumference of the Circle • Area : Triangle, Quadrilateral, Parallelogram, Rhombus, Trapezium and Circle • Area of Pathway 	<ul style="list-style-type: none"> • To recall the concepts of Perimeter and Area of Square, Rectangle and Right triangle. • Able to find the area of plane figures made up of squares, rectangles, and right triangles (any two at a time). • To determine the area of Parallelogram, Rhombus, and Trapezium. • To determine the area and circumference of Circles. • To calculate the area of Pathway inside and outside the given rectangles and circles applying the concept of area of rectangle and circle respectively. 	<ul style="list-style-type: none"> • Through paper cutting methods derive the formula for different shapes. • Through paper cutting introduce methods to find area. • Arrive at an approximate value for tabulating diameter and perimeter of circles of different sizes.
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Topic	Content	Expected Learning Outcomes	Mode of Transaction
V. Geometry	<ul style="list-style-type: none"> • Symmetry - Mirror and rotational • Line or axis of Symmetry • Triangles 	<ul style="list-style-type: none"> • To understand the concept of Symmetry, Mirror and rotational Symmetry, Line or axis of symmetry. • To understand the properties of angles in intersecting lines, adjacent angles, adjacent angles on a straight line, parallel lines and transversal lines. • Able to apply angle sum property of a triangle. 	<ul style="list-style-type: none"> • Introduce idea of symmetry. Give sufficient opportunities to identify all kinds of symmetry. • Rotate figures like square equilateral triangle etc. which have rotational symmetry. • Identify the angle of rotation.

VI. Practical Geometry	<ul style="list-style-type: none"> • Construction of Perpendicular bisector and angle bisector • Construction of angle using Scale and Compass. • Construction of triangles 	<ul style="list-style-type: none"> • To recall the concepts of angles, parallel lines and perpendicular lines from the given figures. • To construct angle using scale and compasses- 90°, 60°, 30°, 120°. • To construct the perpendicular bisector of the given line segment. • To construct the angle bisector of the given angle. • Construction of triangles: given SSS, SAS, ASA. 	<ul style="list-style-type: none"> • To explain perpendicular bisector and angle bisector by paper folding method. • Identify the different types of triangles
VII. Data handling	<ul style="list-style-type: none"> • Collection and organization of continuous data • Formation of frequency table • Mean , Median, Mode of ungrouped data 	<ul style="list-style-type: none"> • To collect and organize continuous data. • To interpret bar graphs (recall) • Able to form the frequency table • To calculate Mean, Median, Mode of ungrouped data and understanding what they represent. 	<ul style="list-style-type: none"> • Use available data in the class room. • Identify the differences between mean, median and mode.

Class – VIII Mathematics

Topic	Content	Expected Learning Outcomes	Mode of Transaction
I. Real Number System	(i) Revision: Representation of Rational Numbers on number line.	<ul style="list-style-type: none"> • To recall the concept of rational numbers, representation of rational numbers on number line • To understand the four properties of rational numbers, additive identity and multiplicative identity. 	Mark the rational numbers on the number line
	(ii) Four properties of Rational numbers	<ul style="list-style-type: none"> • Able to simplify expressions with utmost three brackets. 	Tell the numbers on the right are bigger
	(iii) Simplify Expression with three brackets	<ul style="list-style-type: none"> • To understand that between any two rational numbers there lies another rational number (Making children see that if we take two rational numbers then unlike for whole numbers, in this case you can keep finding more and more numbers that lie between them.) 	Give examples of rational number which are terminating decimals and repeating decimals.
	(iv) Powers		
	(a) Express the numbers in exponential form with integers as exponent.	<ul style="list-style-type: none"> • To express numbers in exponential form with integers as exponents. 	Showing density of rational numbers in a number line.
	(b) Laws of exponent with integral powers	<ul style="list-style-type: none"> • To understand the laws of exponents with integral powers. 	
	(c) Squares, Square roots, Cubes, Cube roots.	<ul style="list-style-type: none"> • Able to calculate square and square roots of integers. - Square roots using factor method and division method for numbers containing 	
	(d) Playing With Numbers	<ul style="list-style-type: none"> ○ not more than 4 digits ○ not more than 2 decimal places (in case of imperfect squares) 	Experimental method to find approximate square root by squeezing method. Puzzles with numbers
	(e) Approximation of numbers		
			<ul style="list-style-type: none"> • To recognize cubes and cube roots (only factor method for numbers containing at most 3

II. Algebra

		digits)	
		<ul style="list-style-type: none"> • • To learn to estimate square roots and cube roots (Learning the process of moving nearer to the required number). • Able to calculate using shortcut methods in four operations. • Able to approximate numbers up to three digits. 	
(i)	Algebraic Expressions (multiplications and divisions)	<ul style="list-style-type: none"> • To recall addition and subtraction of expressions. • Able to multiply and divide algebraic expressions. (Coefficient should be integers). 	Factor tree
(ii)	Identities	<ul style="list-style-type: none"> • Able to understand some common errors 	Use card boards and paper cutting methods to show identities geometrically
(iii)	Factorizations	<ul style="list-style-type: none"> (e.g. $2xx = x$, $7xy = 7xy$) 	
(iv)	Solving linear equations	<ul style="list-style-type: none"> • To deduce identities with geometrical proofs, numerical examples and applies it in sums $(a+b)^2 = a^2 + 2ab + b^2, (a-b)^2 = a^2 - 2ab + b^2,$ $a^2 - b^2 = (a+b)(a-b).$	
		<ul style="list-style-type: none"> • Able to recognize (simple cases only) expressions that are factorizable of the following types $a(x+y), (x \pm y)^2, a^2 - b^2, (x+a)(x+b)$	Factor Tree

III. Life Mathematics

		<ul style="list-style-type: none"> • • Able to solve word problems that involves linear equations (avoid complex coefficient in the equations). 	Problems through life situations
(i)	Revision : Profit, Loss and simple interest.	<ul style="list-style-type: none"> • To solve slightly advanced problems involving applications of Percentages, Profit & Loss, overhead expenses, Discount, tax. 	To understand the different between profit and loss through life situations.
(ii)	Application of percentage, profit &	<ul style="list-style-type: none"> • Able to derive a formula to find compound interest 	

	loss, overhead expenses, Discount, tax.	through patterns and use it in simple problems. (compounded yearly up to 3 years or half-yearly up to 3 steps only).	To compare quarterly half yearly, annual interest schemes paid by companies.
(iii)	Compound Interest		
(iv)	Difference between S.I and C.I	<ul style="list-style-type: none"> • Able to differentiate between simple and compound interest (2 years). 	To collect details of tax, discount sale, etc.
(v)	Compound variation	<ul style="list-style-type: none"> • To do problems on compound variation 	
(vi)	Time & work problems – Simple and direct word problems	<ul style="list-style-type: none"> • To solve Time and Work problems– Simple and direct word problems. 	Post office RD to understand schemes with different interest rates.
			To understand factors involved in completing a project like, building construction etc.
			Problems from life situations for time and work.

IV. Measurements

i	Area and Perimeter of semi circle and quadrant	<ul style="list-style-type: none"> • Able to calculate area and perimeter of semi circle and quadrant. 	Card board, paper cutting and paper folding techniques to understand juxtaposition.
ii	Area and Perimeter of combined Plane Figures	<ul style="list-style-type: none"> • To recall the concepts of area & perimeter -Formula for Square, Rectangle, Parallelogram, Triangle, Right Triangle, Equilateral Triangle, Isosceles Triangle, Scalene Triangle, Trapezium, Quadrilateral, Rhombus, circle. 	To see the number of tiles laid in floors various areas etc.

V. Geometry

(i)	Properties of Triangles	<ul style="list-style-type: none"> • Able to calculate the area of combined figures (Study of area / perimeter of not more than three figures placed in juxtaposition [only simple combined figures]) 	
(ii)	Congruence of Triangles	<ul style="list-style-type: none"> • To recall the properties of triangles. • To understand theorems based on properties of triangles and applies them to appropriate problems. 	Paper folding techniques to verify properties.
(iii)	Circles	<ul style="list-style-type: none"> • To understand the concept of congruence of triangles (SSS, SAS, ASA, RHS theorems). • To understand the concurrency of medians, altitudes, angle bisectors and perpendicular bisectors in a triangle. • To understand Pythagoras theorem and able to solve problems using it. • Able to draw the parts of a circle and identify and compare the relationship between radius and diameter. 	Geometrical instruments Paper cutting methods; To draw triangles and measure sides and angles and verify. To show objects of congruent shape; postal stamps etc.

VI. Practical Geometry

- i. Construction of Quadrilaterals: trapezium, parallelogram, rhombus, rectangle and square
- Able to construct quadrilaterals: trapezium. Parallelogram, rhombus, rectangle and square.
 - Able to construct concentric circles.

Geometrical instruments

Paper folding methods.

- ii. Construction of Concentric Circles.

VII. Graphs

- (i) Introduction to Cartesian plane with axes
- To understand the concept of Cartesian plane with axes.
 - Able to plot points for different kinds of situations (perimeter vs. length for squares, area as a function of side of a square, plotting of multiples of different numbers, simple interest vs number of years etc.)

Graph sheets; To see linear relationship between side and perimeter of square.

- (ii) Plotting of points for different kinds of situations

To understand linear relationship between time and work.

- (iii) Drawing straight lines parallel to coordinate axes

- To learn to read graphs.
- Able to read the linear graphs.
- Able to read the distance vs time graph.

VIII. Data handling

- (i) To recall formation of frequency table

- To recall formation of frequency table.

Mark sheets, heights and weights, data from news paper cutting to construct and interpret frequency table.

- (ii) Drawing Histogram and frequency polygon for grouped data

- To draw Histogram, frequency polygon for grouped data
- To construct simple Pie-charts for the given data.
- Able to calculate mean, median and mode for discrete data

To construct histogram, frequency curve, pie charts from

- (iii) Construction of Simple Pie-Chart.
- (iv) Measures of central tendency

SCIENCE

Standard VI

Applied Biology

The World of Plants

Medicinal plants - Plants as Food - Fiber yielding plants - Ornamental plants - Timber yielding plants - Spices - Animals and their uses

Health and Hygiene

Food Habits

Food variety - Food materials and sources - Plant and animal products used as food - Nutrition - Types of nutrition - Food habits of animals

Components of Food - Nutrients (carbohydrates, proteins, vitamins, fats and minerals) - Need of various nutrients - Balanced diet - Deficiency and diseases

World of Animals

Bio Diversity - Different types of organisms - Unicellular and multi-cellular organisms

Life Process

Structural Organization of Cell - The cell - Types of cell - Plant and animal cell comparison The cell structure and functions

Environmental Science – Resource, Use and Management

Our Environment - Garbage - Disposal of garbage - Vermi composting - Pollution - Types of pollution - Air, water, land and noise pollution

Matter

Separation of Substances - Separation and its importance – Definition - Methods of separation (hand picking, winnowing, sieving, magnetic separation, sedimentation, decantation, filtration, evaporation, condensation and crystallization) - Need of Separation by more than one method

Exploring Chemical Changes and Formulation

Changes Around Us - Classification of changes - Slow and fast - Reversible and – irreversible - Desirable and – undesirable - Periodic and non periodic - Exothermic and endothermic

Exploring the World

Chemistry in Everyday Life - Synthetic fibers - Types and uses – Plastics - Types and uses of plastics - Plastics and environment - Glass and uses - Cement and uses - Soaps, detergents - Preparation and uses.

Matter and Measurement

Measurement - Standard unit of measurement (Length, time and mass) - SI unit - Multiples and sub Multiples of units

Forces and Movement

Motion - Moving things around us - Types of Motion - Linear and Circular - Uniform and Non uniform - Science today - Robot

Exploring Energy

Types of Energy - Sources of energy - Electricity, chemical, mechanical and solar energy

Exploring Phenomena

Magnetism - Discovery of magnets - Magnetic and non-magnetic materials - Magnetic poles - Preparation of Magnets - Science today – Flying trains

Light - Sources of light – Shadows - Path of light - Pinhole camera - Plane mirrors and reflection

Standard VII

Applied Biology

Animals in Daily Life - Uses of animals - Animal products (Food, Clothing, etc.,) - Animal Fibers - Sericulture - Apiculture - Poultry - Animal protection and maintenance

Health and Hygiene

Nutrition in Plants and Animals - Mode of nutrition in plants - Autotrophic and heterotrophic nutrition - Photosynthesis - Other modes of nutrition in plants - Nutrition in animals - Nutrition in amoeba - Human digestive system - Types of teeth - Ruminants

My Body

Human Body – Form & Function - Brief overview of human body— structure & functions of all the Human organ systems - The body & health as understood in the Indian system of health care - Diseases, Disorders and preventing Diabetes Mellitus - Advantages of physical activity - Preservation of food - Methods of preservation (heating, freezing, drying and adding preservatives) - Fast food - its ill effects - Science today - Irradiated food

World of Plants

Plants – Morphology - Characteristics of living things - Habitat - various habitats of plants - Herbs, shrubs and trees - Parts of plant - Root, stem, leaves and flowers - Modification of roots, stems, leaves - Kinds of stem - Movements in plants - Observation of plants & trees, recording data, drawing

World of Animals

Basis of Classification - Need for classification - The 5 kingdom classification - Binomial Nomenclature

Life Process

Respiration in Plants and Animals - Need for respiration - Respiration in human being - Respiration in animals - Respiration in plants

Environmental Science - Ecology

Ecosystem - Ecosystem (Biotic and abiotic factors) - Food chain - Food web - Flow of Energy - Biomes - The different biomes--- vegetation & climatic zones - Importance of forest - Different flora & fauna in the biomes

Environmental Science – Resource, Use and Management

Water –A Precious Resource - Availability of water - Sources of water - Forms of water - Ground water - Depletion of water - Distribution of water - Scarcity of water - Water management—rain water harvesting - Science today - Drinking water - Desalination of sea water - Sweet water on earth

Matter

Matter in our Surroundings - Physical nature of matter - Characteristics of particles of matter - States of matter - Effect of temperature on solid, liquid and gas.

Exploring Chemical Changes and Formulation

Matter and Its Nature - Physical Changes (crystallization, melting, evaporation, freezing and sublimation) - Chemical changes (rusting of iron, burning and curdling, chemical reaction of Baking Soda with lemon juice) - Differences between physical and chemical changes - Acids, Bases and Salts - Acids, Bases and salts (used in our daily life) Natural indicators (No Equations) – Neutralization (in everyday life)

Exploring the World

Combustion and Flame - Combustion and its type - Fire control - Flame and its structure - Efficiency of fuels - Fuels and environment

Matter and Measurement

Measurement - Idea of derived quantities- Area, Volume and Density of solids and liquids - Concept of indirect measurement or estimation- Example (Time- Simple pendulum) - Measuring astronomical distances

Forces and Movement

Motion – Speed - Measuring speed and Units of speed – Distance - time graph – Velocity – Acceleration - Science today – Adventures in sports – like a bird flies

Exploring Energy

Electricity and Heat - Electric cell - An electric circuit - Symbols of electric components - Electric switch - Conductors and insulators - Heating effect of electric current - Magnetic effect of electric current - Electro magnet - Electric bell – Heat - Sources of heat (sun, combustion (or) burning, friction, electrical) - Hot and cold objects - Heat and temperature – Measuring temperature – Clinical and Laboratory thermometers

Exploring Phenomena

Light – Reflection - Plane Mirror (Right or left) - Images of spherical mirrors - Sunlight – seven colors – dispersion & synthesis of colors – Newton’s Disc.

Standard VIII

Applied Biology

Crop Protection and Management - Agricultural practices - Basic practices of crop protection - Preparation of soil and sowing – Irrigation - Protection from weeds – Harvesting – Storage – Marketing - Rotation of crops - Biotechnology in Agriculture - Biotechnology in food processing

Health and Hygiene

Reaching the Age of Adolescence - Adolescence and puberty - Secondary sexual characters - Ductless glands - Role of hormones in reproduction - Reproductive phase of life in human - Sex determination - Reproductive Health - Nutritional needs - Personal hygiene - Prevention and protection from sexual and other abuse - Smoking hazards - Sprouting - Cancer and Prevention

My Body

Body Movements - Human body and its movements - Joints and types of joints - Skeleton - Movements of animals (Earthworm, cockroach, birds, fish and snakes)

World of Plants

Pictorial Feature of Plant Kingdom - Fungi - Flowering & Non Flowering - Algae - Bryophytes - Pteridophytes - Gymnosperms - Angiosperms - Monocotyledons - Dicotyledons - Structure of root - Structure of stem - Structure of leaf.

World of Animals

Micro Organisms - Virus, bacteria, algae, fungi and protozoa - Uses of microorganisms in medicine, agriculture, industry and daily living - Harmful microorganisms - Microbes in food preservation - Relationship between man & microbes - Balances, imbalances and uses.

Life Process

Diversity in Living Organism - Cell as a fundamental unit of life - type of human cells related to functions - Structure & function of all organelles in brief - Organization-- cells - tissues - organs - organ system - Homeostasis - Cellular respiration - Metabolism - Design of the body -based on function - some examples.

Environmental Science - Ecology

Conservation of Plants and Animals - Conservation of forest and wild life - Deforestation and afforestation - Flora and fauna - Endangered species - Red data book - Migration - Wildlife sanctuary and National park - Threats to biodiversity - Traditional knowledge & people's initiatives in biodiversity conservation - Human wildlife conflicts

Environmental Science – Resource use and Management

Pollution of Air, Water and Soil - Air pollution - Sources of air pollution - Water pollution - Sources of water pollution - Water purification - Land pollution - Sources of land pollution - Science today – Bio pole – easily decomposable and reusable plastics

Matter

Elements and Compounds Around us - Types of pure substances - Element - Occurrence of elements in Nature - Elements found in Human Body - Classification of elements based on states (solids, liquids, Gases) - Classification of Elements based on properties - Symbol of elements - Molecule of an element - Compound - Characteristics of Compounds - Classification of compounds - Uses of compounds-day to day life - Molecule of compound - Formula of compound - Valency

Atomic Structure

Atomic Structure - Ancient views of atomic structure - Laws of chemical Combination - Dalton's atomic theory - Merits - Demerits - Electrical nature of matter - Discovery of Fundamental Particles - Discovery of Electrons - Properties of Cathode Rays - Discovery of Protons - Properties of fundamental particles - Atomic model - J.J. Thomson's model of atom - Limitation of Thomson Model

Exploring the World

Coal and Petroleum – Coal - Types of Coal – Petroleum - Occurrence and Refining - Natural gas - Natural Resources - limitation - Science today

Matter and Measurement

Measurement - S.I. System of units – Temperature - Electric current - Amount of substance - Luminous intensity - Angle, Solid Angle

Forces and Movement

Force and Pressure Definition - State of motion - Action of force & its effects - Contact forces - Non contact forces - Magnetic forces - Gravitational force - Electrostatic force – Pressure - Pressure exerted by liquids and gases - Pressure exerted by air - Atmospheric pressure Pascal's law – Friction - Factors affecting friction - Friction - necessary evil – Increasing and reducing friction

Exploring Energy

Electricity and Heat - Three kinds of circuit- Simple, series and parallel - Conduction of electricity in liquids - Chemical effects - electric current - Applications of Chemical effects of electric current – Electroplating - Electric charges at rest - Types of charges - Transfer of charges - Story of lightening and thunder Lightening – safety – Heat - Effects of Heat - Transfer of heat – conduction, convection and radiation

Exploring Phenomena

Light - Laws of reflection - Regular and irregular reflections - Multiple reflections - Multiple images - Refraction (Snell's law not

included) - Dispersion – using prism - Total internal reflection -
Human eye - Image formation – Sound - Sound needs a
medium for propagation - Sound produced by human - Human ear
and Hearing - Amplitude, Time period - and frequency of vibration -
Audible and Inaudible sounds - Noise - Noise pollution - Science
today – Fiber optics – sending message by light