

Mathematics is the Queen of All Sciences

TEACHING PLANS

(Year and Unit Plans)

Subject: MATHEMATICS

10th CLASS

Teaching Plan for

- What to teach
- Why to teach
- How to teach

Name of the Teacher

Designation

School.....

Mandal.....

District.....

PREFACE

In the ever-evolving landscape of school education, particularly in the teaching of Mathematics, the role of a well-structured teaching plan cannot be overstated. Teaching, learning, and assessment are intricately interlinked processes that require thoughtful planning, timely execution, and continuous reflection. In this context, this booklet, titled “Teaching Plans for Classes 6th to 10th – Year Plan & Unit Plan in Mathematics”, is a valuable and timely contribution to the professional toolkit of every mathematics teacher.

Effective classroom transaction hinges on meticulous and purposeful planning. Planning acts as the compass that guides teachers through the academic year, ensuring that curricular goals and learning outcomes are achieved within the stipulated timeframe. This booklet offers a comprehensive and structured approach to teaching mathematics, integrating pedagogical expertise with innovative practices in education.

The booklet includes two core planning formats that are essential for successful mathematics instruction:

1. Year Plan – This section provides a macro-level view of the academic year for each class from 6th to 10th. It includes clearly articulated class-wise learning outcomes, monthly allocation of syllabus and units, a detailed period distribution for each unit, essential teaching-learning resources (TLMs, ICT tools, and AI-integrated tools), and a calendar of monthly mathematics activities. Additionally, space for teacher reflections has been included to encourage introspection and self-improvement.
2. Unit Plan – Focusing on the meso level of planning, the unit plans present unit-wise learning outcomes, structured concept maps, clearly demarcated subtopics with associated textbook exercises, and an array of resources such as digital tools, manipulatives, and learning management systems. Each unit includes teacher notes, facilitating a deeper understanding of pedagogical approaches, and provision for teacher reflections and Headmaster's observations for professional dialogue and review.

These plans are more than just templates—they are crafted by a team of eminent and experienced mathematics educators who are well-versed in content, pedagogy, and the practical realities of classroom teaching. As senior resource persons and subject experts, their experience in training teachers, developing curriculum materials, and leading innovative practices in mathematics education adds immense value to this work.

Furthermore, this booklet also includes a Model Teacher Diary, which aims to support reflective teaching. The diary format encourages teachers to document their day-to-day teaching experiences, track student progress, and refine their strategies based on ongoing assessment and classroom feedback.

In the spirit of the National Education Policy (NEP) 2020, which emphasizes competency-based learning, integration of ICT, and continuous professional development of teachers, this booklet aligns with national priorities and classroom

realities. It encourages the use of digital tools, AI, and experiential learning in the teaching of mathematics to improve student engagement and learning outcomes.

It is hoped that this resource will serve as a practical guide and a source of inspiration for all mathematics teachers working in schools. Whether a new teacher seeking guidance or an experienced teacher aiming to refine practice, these plans provide clarity, structure, and motivation. More importantly, they help transform classroom teaching into a meaningful, engaging, and outcome-oriented experience for students.

Let this booklet be a light post guiding every teacher toward creating a vibrant, interactive, and learning-centered mathematics classroom. Through meticulous planning and reflective practice, let us all work toward improving the mathematical abilities of every child.

With sincere appreciation for the teacher community's dedication and commitment to excellence.

Note: *These teaching plans are meant to serve as models only. Teachers may modify or design their own plans based on their convenience and specific classroom needs.*

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TEACHING DIARY

Date: _____

Teacher Name : Subject:

S.No	Period	Class	Name of the Unit/ Chapter	Name of the Sub-topic/Concept	Learning Outcomes to be achieved	Remarks
1						
2						
3						
4						
5						
6						
7						
8						

Signature of the Teacher

Signature of the Headmaster

SOME USEFUL ICT RESOURCES FOR TEACHING LEARNING AND ASSESSMENT PROCESS IN MATHEMATICS

<https://www.nctm.org/pows/>

<https://www.nctm.org/Classroom-Resources/Illuminations/Interactives/cubes/>

<https://ncert.nic.in/science-laboratory-manual.php?ln=en>

<https://ncert.nic.in/exemplar-problems.php?ln=en>

<https://arvindguptatoys.com/math-magic.php/toys-from-trash.php>

<https://mathforlove.com/>

<https://activities.graspablemath.com/>

<https://mathequalslove.net/>

<https://apps.mathlearningcenter.org/geoboard/>

<https://www.geogebra.org/u/community+team>

<https://www.robocompass.com/>

YEAR PLAN

CLASS: 10th

SUBJECT: Mathematics

Number of Allotted Periods: 143 Periods

Learning Outcomes that Students should achieve by the end of the Academic Year:

The learner

- Generalizes properties of numbers and their relationships studied earlier to derive results such as **Euclid's Division Algorithm** and the **Fundamental Theorem of Arithmetic** and applies them to solve problems related to real-life contexts.
- Derives **proofs for the irrationality of numbers** using logical reasoning.
- Identifies **exponential and logarithmic forms**, derives the **laws of logarithms**, and solves problems using them.
- Identifies **sets** among given collections and classifies them as **finite, infinite, singleton, null**, etc.
- Analyses sets by representing them through **Venn diagrams** and interprets relationships.
- Develops a relationship between **algebraic and graphical methods** for finding the **zeroes of a polynomial**.
- Solves **pairs of linear equations in two variables** using graphical and various algebraic methods.
- Demonstrates strategies to find the **roots** of a quadratic equation and determine their **nature**.
- Applies the concepts of **Arithmetic Progression (A.P.)** and **Geometric Progression (G.P.)** to real-life situations.
- Derives formulae and establishes relationships between geometrical quantities in the coordinate plane, such as **distance between two points, coordinates of a point dividing a line segment, and area of a triangle**.
- Differentiates between **congruent** and **similar figures** using geometric reasoning.
- Establishes properties of **similar triangles** logically using known theorems such as the **Basic Proportionality Theorem**, etc.
- Constructs a triangle **similar** to a given triangle using a specified **scale factor**.
- Examines the steps involved in **geometrical constructions** and justifies each step with reasoning.
- Derives **proofs of theorems** related to **tangents drawn from a point to a circle**.
- Constructs a **pair of tangents** from an external point to a circle and justifies the procedure.
- Determines all **trigonometric ratios** for a given acute angle in a right-angled triangle.

- Establishes **relationships among trigonometric ratios** of acute angles.
- Applies trigonometric ratios to solve real-life problems, such as finding **heights and distances**.
- Calculates **surface areas and volumes** of real-world objects by visualizing them as combinations of solids like **cylinder and cone, cylinder and hemisphere, combinations of cubes**, etc.
- Demonstrates strategies for finding surface area and volume when a solid is **converted** from one shape to another.
- Calculates **mean, median, and mode** for various data sets related to real-life situations.
- Determines the **probability of an event** and applies the concept to solve problems from daily life

Month Wise Syllabus Division:

Number of Unit	Name of the Unit	Month	Number of periods required	TLM/ICT tools	Activities to be conducted	Sign of Subject Teacher	Sign of the Headmaster	Remarks
1	Real Numbers	June	15	Chart of Properties of Logarithms	Finding HCF using graph strips			
2	Sets	July	11	Charts of Venn Diagrams	Preparation of Venn diagrams by students			
3	Polynomials	July	11	Chart of relationship between zeroes and coefficients	Preparation of Graphs			
4	Pair of Linear Equations in Two variables	September	10	Chart of relationship between coefficients and nature of systems	Preparation of Graph by students			
5	Quadratic Equations	October	8	Chart of nature of the roots				

6	Progressions	December	10	Chart of formulae	Preparation of Project and Review		
7	Coordinate Geometry	November	10	Chart of formulae	Preparation of Project and Review		
8	Similar Triangles	August	16	Chart of Pythagoras Theorem	Quiz		
9	Tangents and Secants to a circle	November	9	Chart of segments of a circle			
10	Mensuration	December	10	Models of 3-D shapes	Celebration of National Mathematics Day		
11	Trigonometry	August	11	Charts of formulae			
12	Applications of Trigonometry	September	6	Charts showing line of sight, angle of elevation, angle of depression			
13	Probability	January	6	Dice, Coins, Deck of cards	Quiz		
14	Statistics	July	12	Charts of formulae of Mean, Median and Mode	Preparation of Project and Review		
15	Revision	From 11 th January to till the start of Public Exams		Preparation for Public Exams			

Academic Standards:

1. Problem Solving
2. Reasoning – Proof
3. Communication
4. Connection
5. Visualization and Representation

Note: Use and integrate the following ICT tools in Teaching, learning and Assessment processes wherever it is necessary and useful.

1. GeoGebra
2. Desmos
3. NCTM Illuminations/Digital Resources
4. Google Interactive Work Sheets
5. Quizzes
6. Google Forms
7. Canva
8. Chat GPT

1. REAL NUMBERS

Class: X

Name of the Unit: 1.Real Numbers

Learning Outcomes: The learner

- Applies Euclid's Division Lemma to find HCF of two numbers.
- Justifies irrationality of $\sqrt{2}$, $\sqrt{3}$ using logical proofs.
- Classifies real numbers into rational and irrational numbers.
- Converts rational (p/q) numbers into decimal expansions to vice versa.
- Gives reasons for whether the given p/q forms number is a terminating decimal or not?
- Converts numbers between exponential and logarithmic forms.
- Uses laws of logarithms in solving daily life problems.
- Verifies properties of logarithms using examples.
- Communicates solutions using appropriate symbols and terminology.
- Establishes links between number systems and algebraic operations.

Prerequisites: Students must know the following:

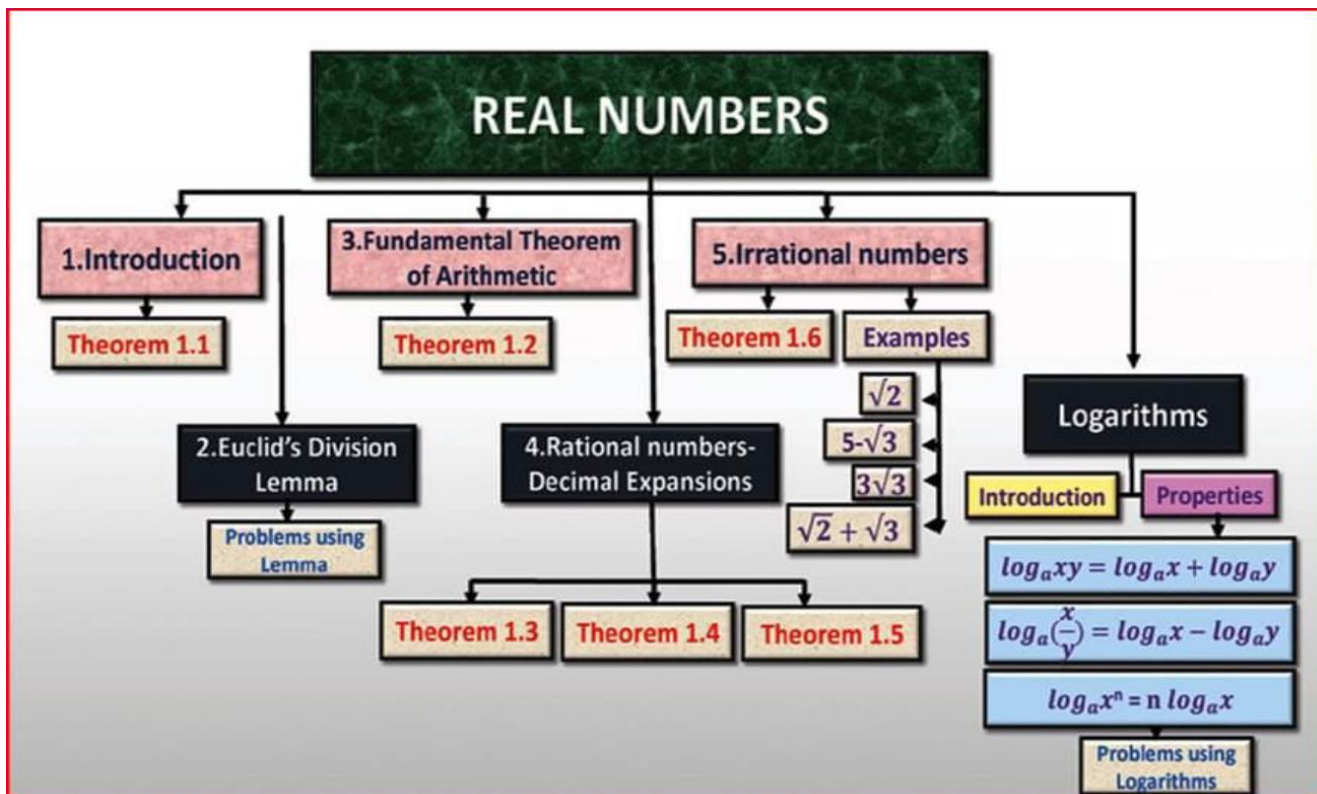
Number System, LCM and HCF, Operations on Integers, Terminating and Non-terminating recurring decimals, Irrational Numbers and Laws of Exponents.

Number of allotted periods: 15Periods.

Unit/Lesson Name	Sub-topics	Teaching Periods	Remarks
1. Real Numbers	1.Introduction and Relevance of the Lesson	1	--
	2. Euclid Division Algorithm and finding HCF	1	
	3. Exercise 1.1	1	
	4. Fundamental Theorem of Arithmetic and its applications	1	
	5. Exercise 1.2	1	
	6. Rational Numbers and their Decimal Expansions, Non-Terminating Recurring Decimals in Rational Numbers.	1	
	7. Exercise 1.3	2	
	8. Irrationality of the Numbers	1	

	9. Exercise 1.4	2	
	10. Introduction and Properties Logarithms	1	
	11. Exercise 1.5	2	
	12. Revision and Slip Test	1	
	TOTAL	15	

CONCEPT MAP:



Teaching Resources: Chart of Properties of Logarithms, Chart of Number systems.

ICT TOOLS: LMS APP (IFP), GeoGebra, DIKSHA, Khan academy.

Teaching Notes:

TEACHER'S REFLECTIONS:

2. SETS

Class: X

Name of the Unit: 2. SETS

Learning Outcomes: The learner

- Defines different types of sets with real-life examples.
- Uses symbolic language to represent set relationships.
- Converts sets from roster form to set-builder form and vice versa.
- Uses Venn diagrams to represent relationships between sets.
- Identifies subsets, universal, and disjoint sets.
- Gives reasons to determine whether the given two sets are disjoint or not.
- Solves problems involving operations on sets, i.e., union, intersection, and difference of two sets.
- Calculates the cardinality of finite sets.
- Connects set concepts with probability and statistics.
- Explains differences between finite and infinite sets.
- Justifies the use of set theory in organizing information.
- Applies set theory to classification problems in other subjects.

Chapter 3: **Prerequisites:** Students must know the following:

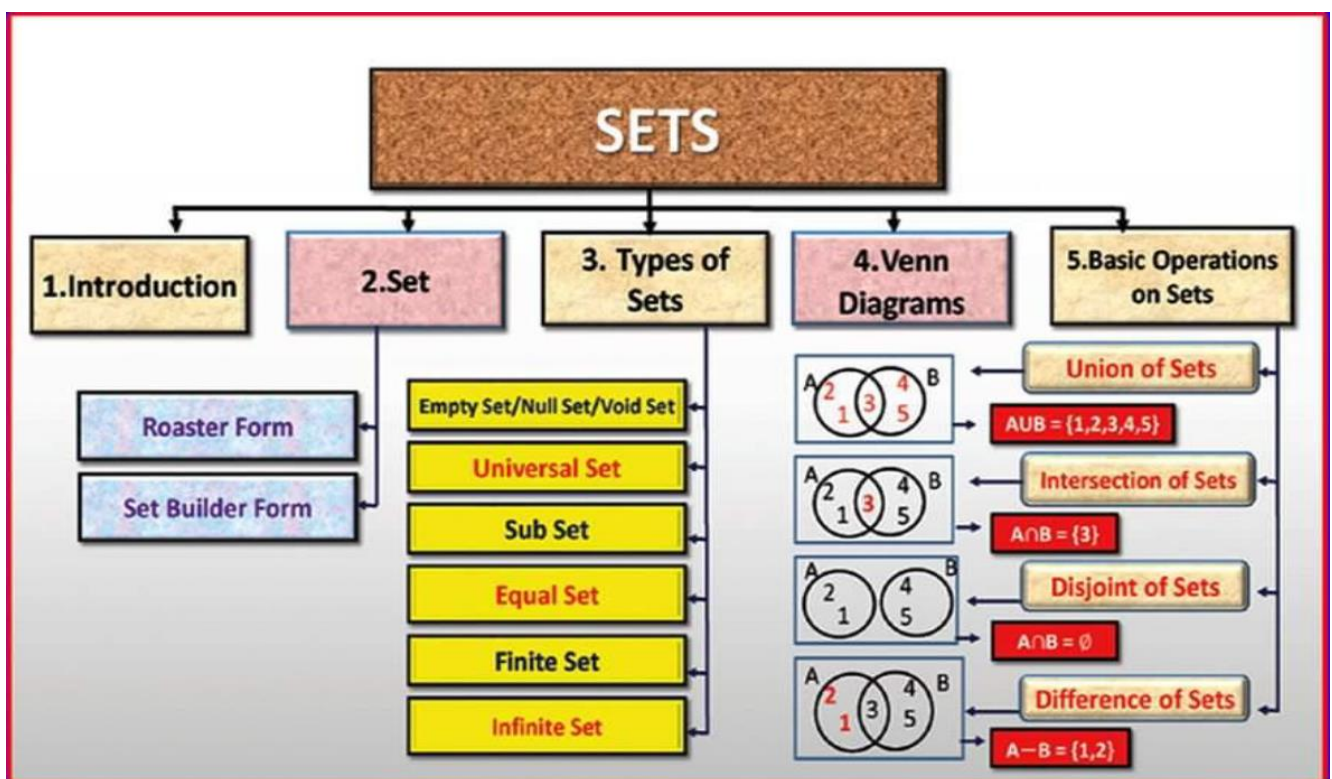
Natural Numbers, Whole Numbers, Integers, Rational Numbers, Irrational Numbers, Real Numbers, even numbers, odd numbers, multiples of a given number, factors of given numbers etc.

Number of allotted periods: 11 Periods

Unit/Lesson Name	Sub-topics	Teaching Periods	Remarks
2. Sets	1. Introduction and relevance of the lesson.	1	
	2. Representation of sets (Roster form and Set builder form)	1	
	3. Exercise – 2.1	1	
	4. Types of sets. Universal Set, subset, null set	1	
	5. Basic Operations on sets. Union, Intersection, difference of sets and Disjoint sets	1	

	6. Exercise – 2.2	2	
	7. Venn diagrams of sets	1	
	8. Equality of sets and Exercise – 2.3	1	
	9. Finite sets, Infinite sets and Cardinality of sets and Exercise – 2.4	1	
	10. Revision/Slip Test	1	
	TOTAL	11	

CONCEPT MAP:



Teaching Resources: Charts of Venn diagrams.

ICT TOOLS: IFP, GeoGebra, DIKSHA App, Khan academy.

Teaching Notes:

TEACHER'S REFLECTIONS:

3. POLYNOMIALS

Class: X

Name of the Unit: 3. Polynomials

Learning Outcomes: The learner

- Identifies degrees and types of polynomials.
- Finds the zeroes of a given polynomial and verifies whether the given values are zeros of the polynomial or not.
- Expresses a polynomial when its zeroes are given
- Relates zeroes to coefficients in quadratic and cubic polynomials.
- Applies factor theorem and remainder theorem in problem-solving.
- Performs algebraic division of polynomials.
- Uses algebraic language to explain the division algorithm.
- Represents the polynomials (linear, quadratic and cubic) graphically and locates certain zeroes.
- Visualizes graphs of quadratic and cubic polynomials.
- Connects polynomial zeros to algebraic identities.
- Communicates patterns found in coefficients and zeros.
- Analyzes patterns across polynomials for generalization.

Prerequisites: Students must know the following:

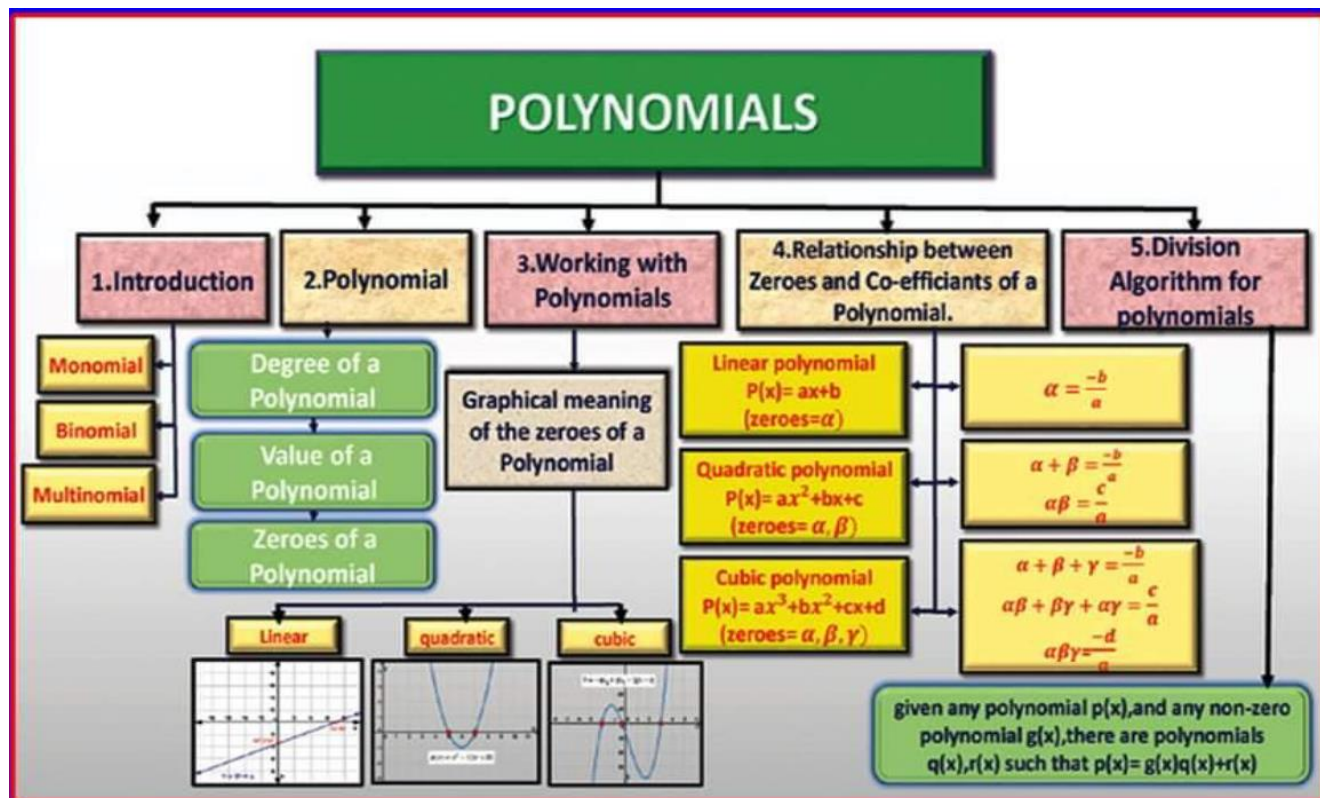
Integer addition and multiplication, rational numbers additions and multiplication, Algebraic expressions, polynomials, zero of the polynomials, degree of the polynomial, locating points on coordinate system.

Number of allotted periods: 11 Periods

Unit/Lesson Name	Sub-topics	Teaching Periods	Remarks
3. Polynomials.	1 Introduction and relevance of the lesson	1	
	2. Zeroes of the polynomial, degree of the polynomial	1	
	3. Exercise – 3.1	1	
	4. Graphical Representation of Polynomials.	1	
	5. Exercise – 3.2	2	
	6. Relationship between zeroes and coefficients of quadratic and cubic polynomials.	1	
	7. Exercise – 3.3	1	

	8. Division Algorithm for polynomials	1	
	9. Exercise – 3.4	1	
	10. Revision/Slip Test	1	
	TOTAL	11	

CONCEPT MAP:



Teaching Resources: Chart of polynomials and their degree, Chart of relationship between zeroes and coefficients of polynomials.

ICT TOOLS: GeoGebra, LMS App (IFP), DIKSHA App, Khan academy.

Teaching Notes:

TEACHER'S REFLECTIONS:

4. PAIR OF LINEAR EQUATIONS IN TWO VARIABLES

Class: X

Name of the Unit: 4. Pair of Linear equations in two variables.

Learning Outcomes: The learner

- Forms linear equations from real-life situations and vice versa.
- Represents the linear equations in two variables through graphically and interprets.
- Solves equations by substitution and elimination methods.
- Gives reasons to determine whether a pair of linear equations is consistent or inconsistent.
- Connects solutions of equations to real-world decisions.
- Communicates multiple representations (table, graph, equations).
- Explains why some systems have no or infinite solutions.
- Uses reasoning to select appropriate methods.
- Links linear equations with coordinate geometry.
- Generalizes methods for solving linear systems.
- Solves real-life problems using the concept of linear equations by different methods.

Prerequisites: Students must know the following:

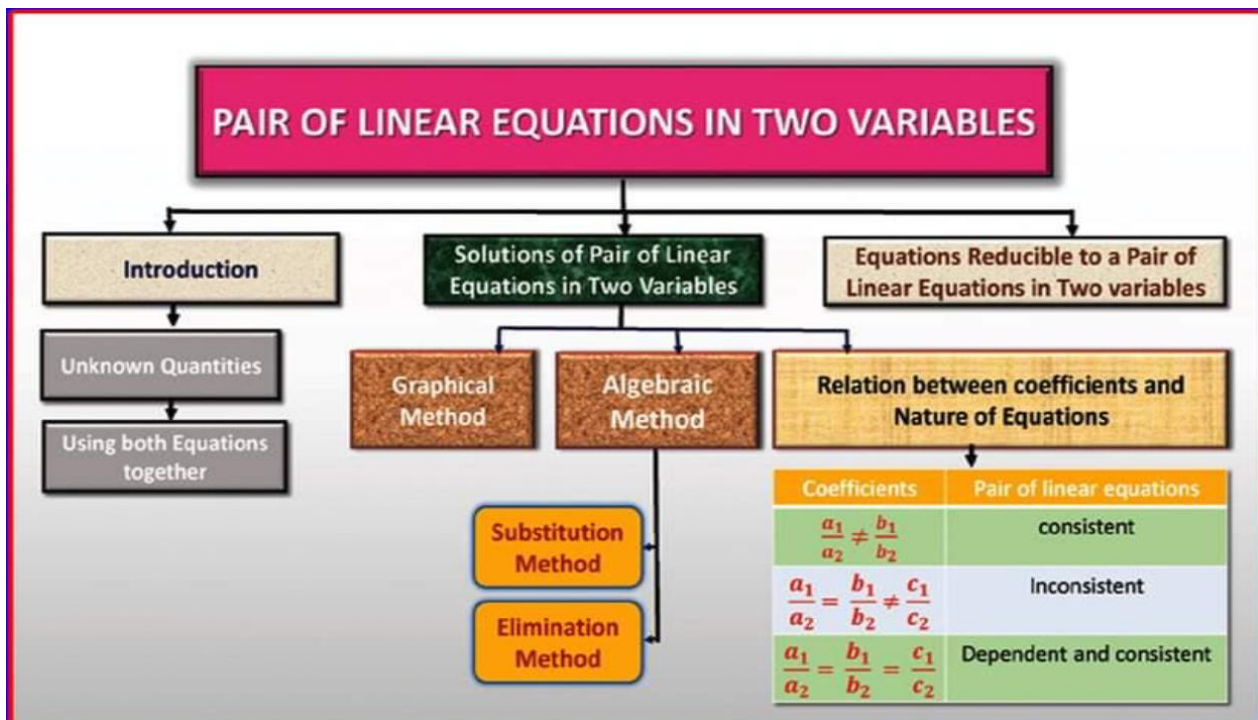
Algebraic expressions, Linear equation in one variable and their solution, Linear equation in two variables and their graphical representation, Parallel lines, Intersecting lines and coincident lines.

Number of allotted periods: 10 Periods.

Unit/Lesson Name	Sub-topics	Teaching Periods	Remarks
4. Pair of Linear Equations in Two variables	1. Introduction and relevance of the lesson	1	
	2. Graphical representation of Pair of Linear Equations in two variables	1	
	3. Relationship between coefficients and nature of system of equations (determining the consistency and inconsistency)	1	
	4. Exercise – 4.1	2	
	5. Solving a pair of linear equations in substitution method and elimination method.	1	

	6. Exercise – 4.2	1	
	7. Equations reducible to pair of linear equations	1	
	Solving Real life problems & 8. Exercise – 4.3	2	
	9. Revision/Slip Test	1	
	TOTAL	10	

CONCEPT MAP:



Teaching Resources: Chart of Relationship between coefficients and nature of system of equations.

ICT TOOLS: GeoGebra, DESMOS, LMS APP I(FP), DIKSHA APP, KHAN ACADEMY.

Teaching Notes:

TEACHER'S REFLECTIONS:

5. QUADRATIC EQUATIONS

Class: X

Name of the Unit: 5. Quadratic Equations.

Learning Outcomes: The learner

- Identifies standard form of quadratic equations.
- Forms a quadratic equation when two roots are given.
- Solves using factorization and quadratic formula.
- Determines nature of roots using discriminant.
- Verifies whether the given values are the roots of the quadratic equation.
- Represents quadratic equations using graphs.
- Connects solutions to geometric shapes like parabolas.
- Justifies solutions algebraically.
- Communicates process of solving complex equations.
- Explores equations with irrational and real roots.
- Applies multiple methods for checking correctness.
- Solves application-based daily life problems (area, speed, etc.).

Prerequisites: Students must know the following:

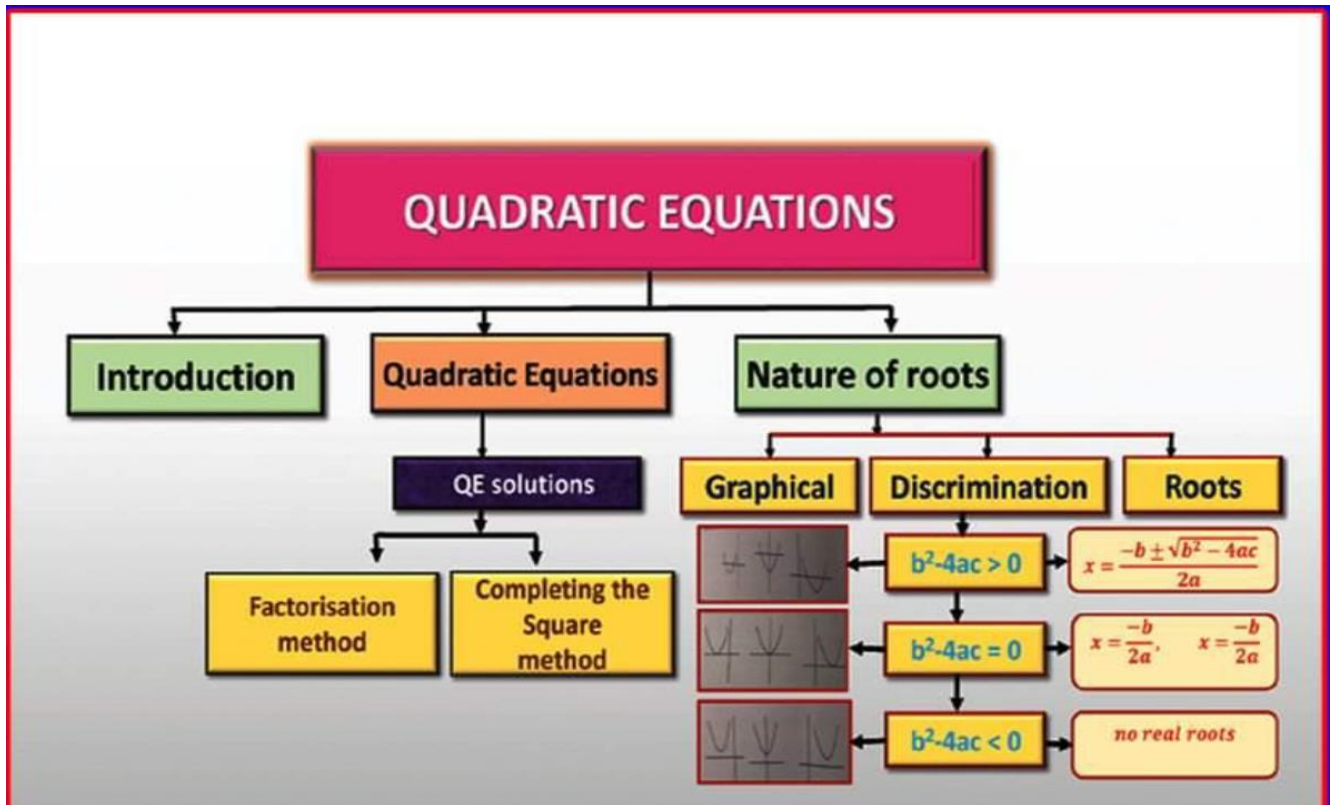
Polynomials, equations, degree of the equations, Solving linear equations, zeroes of polynomials.

Number of allotted periods: 8 Periods.

Unit/Lesson Name	Sub-topics	Teaching Periods	Remarks
5. Quadratic Equations	1. Introduction and relevance of the lesson and Exercise – 5.1	1	
	2. Solution of Quadratic equations by factorization	1	
	3. Exercise 5.2	1	
	4. Solution of Quadratic Equations by completing square method.	1	
	5. Exercise 5.3	1	
	6. Discriminant and nature of the roots	1	

	7. Exercise 5.4	1	
	8. Revision/Slip Test	1	
	TOTAL	8	

CONCEPT MAP:



Teaching Resources: Chart of quadratic Equations, Chart of nature of the roots

ICT TOOLS: GeoGebra, LMS App (IFP), DIKSHA App, Khan Academy.

Teaching Notes:

TEACHER'S REFLECTIONS:

6. PROGRESSIONS

Class: X

Name of the Unit: 6. Progressions

Learning Outcomes: The learner

- Defines A.P. and G.P. with real-life examples.
- Derives the formulas related AP : n^{th} term of AP, sum of first n terms, sum of first n natural numbers etc by visualisations method using graph /grid paper.
- Finds the nth term of an A.P. or G.P.
- Calculates the sum of n terms of an A.P.
- Connects arithmetic progression with number patterns.
- Applies formulas to solve real life contextual problems related to AP.
- Communicates understanding of sequences and progressions in mathematical form.
- Identifies missing terms in a given sequence.
- Justifies whether a sequence is an arithmetic progression (A.P.) and whether a given term belongs to that A.P
- Visualises progressions using number lines and graphs / grid paper.
- Creates sequences/ progressions based on the given conditions.

Prerequisites: Students must know the following:

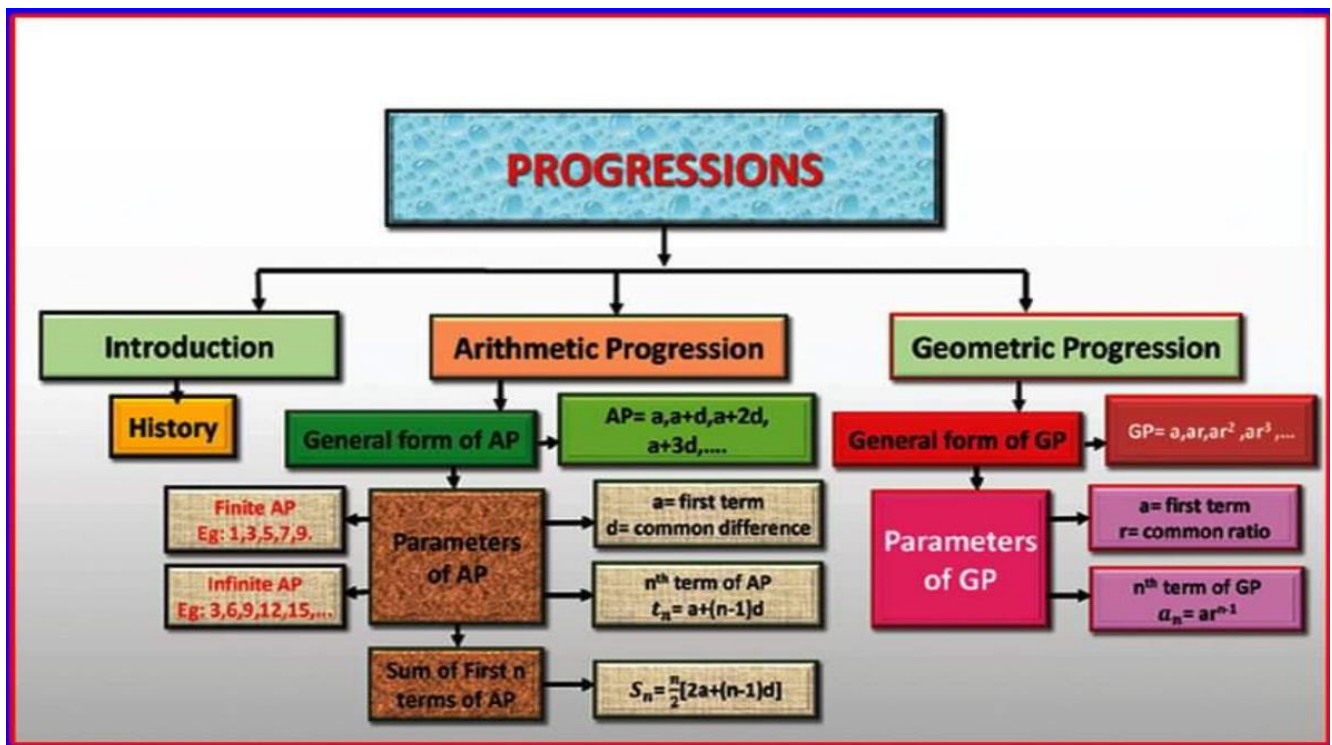
Sequences, Basic operations on rational numbers

Number of allotted periods: 10 Periods.

Unit/Lesson Name	Sub-topics	Teaching Periods	Practice Periods
6.Progressions	1. Introduction and relevance of the lesson	1	
	2. Arithmetic Progression and Exercise – 6.1	1	
	3. n^{th} term of arithmetic progression	1	
	4.Exercise – 6.2	1	
	5. Sum of n terms of an A.P.	1	

	6. Exercise – 6.3	2	
	7. Geometric Progression and Exercise – 6.4	1	
	8. n^{th} term of G.P. and Exercise – 6.5	1	
	9. Revision/Slip Test	1	
	TOTAL	10	

CONCEPT MAP:



Teaching Resources: Chart of sequences, chart of formulae

ICT TOOLS: GeoGebra, LMS (IFP APP), DIKSHA App

Teaching Notes:

TEACHER'S REFLECTIONS:

7. COORDINATE GEOMETRY

Class: X

Name of the Unit: 7. Coordinate Geometry.

Learning Outcomes: The learner

- Applies the distance formula to find the distance between two points.
- Uses the midpoint formula to find coordinates of midpoints.
- Divides a line segment in a given ratio using the section formula.
- Visualizes geometrical representation of points and lines on the Cartesian plane.
- Connects coordinate geometry with algebraic geometry.
- Derives various formulas—such as the distance formula, section formula, midpoint formula, centroid formula, area of a triangle, and slope—using the Cartesian plane or through visualization on graph paper.
- Justifies results using formulas and graph interpretation.
- Applies coordinate geometry in daily life contextual problems (maps, land area, etc.).
- Communicates geometric meaning of algebraic expressions.
- Verifies collinearity of points using distance formula or area of triangle formula.
- Verifies whether a given set of coordinates forms a specific type of quadrilateral, such as a square, rectangle, or parallelogram etc.
- Explains reasoning behind coordinate geometry formulas with examples.

Prerequisites: Students must know the following:

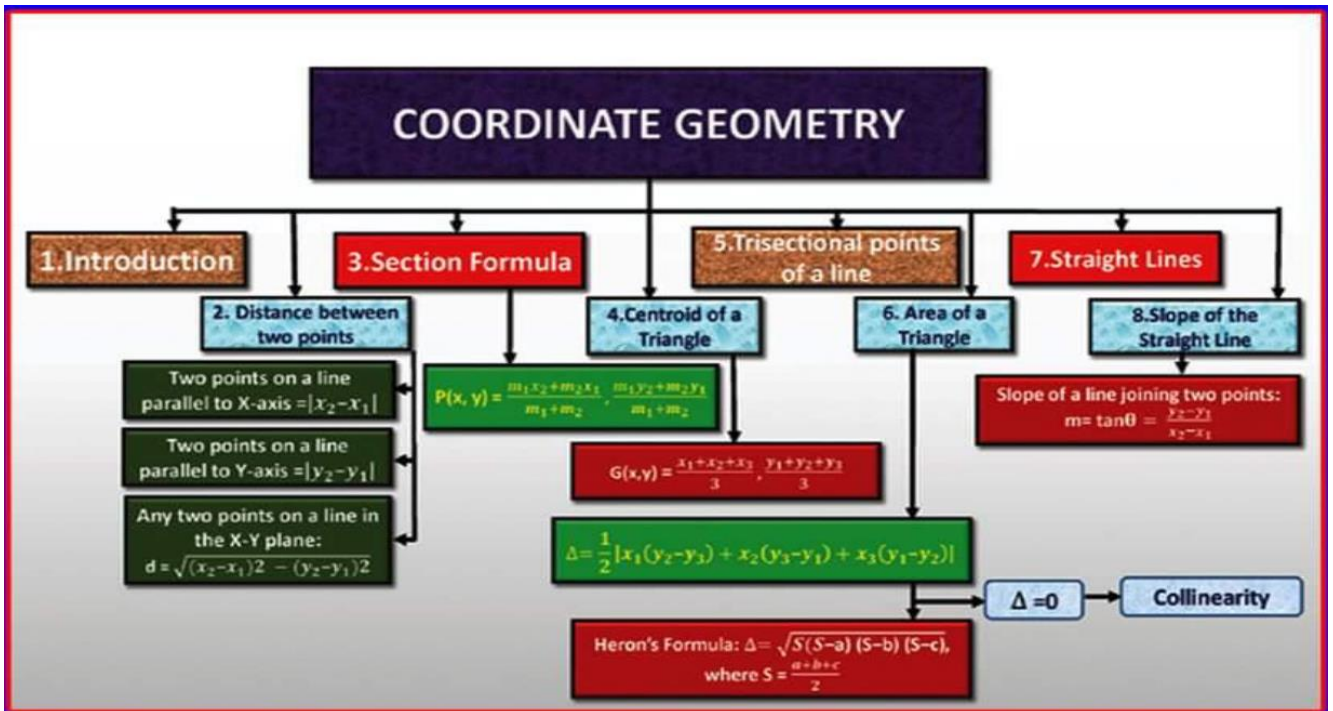
Coordinate system, locating points on coordinate system, Properties of various types of triangles, properties of various types of quadrilaterals, properties of circles.

Number of allotted periods: 10 Periods.

Unit/Lesson Name	Sub-topics	Teaching Periods	Remarks
10. Coordinate Geometry	1. Introduction and relevance of the lesson	1	
	2. Distance between two points	1	
	3. Exercise – 7.1	2	
	4. Section formula	1	
	5. Midpoint, points of trisection and centroid of triangle	1	
	5. Exercise – 7.2	1	

	6. Area of triangle and collinearity	1	
	7. Exercise – 7.3	1	
	8. Slope of Line and Exercise – 7.4	1	
	9. Revision/Slip Test	1	
	TOTAL	10	

CONCEPT MAP:



Teaching Resources: Chart of formulae, chart of different types of triangles, chart of different types of quadrilaterals. Graph Paper

ICT TOOLS: GeoGebra, DESMOS, IFP- LMS AAP,

Teaching Notes:

TEACHER'S REFLECTIONS:

8. SIMILAR TRIANGLES

Class: X

Name of the Unit: 8. Similar Triangles

Learning Outcomes: The learner

- Applies AA, SSS, and SAS criteria to identify similar triangles and provides justification for the similarity of given triangles
- Gives reasons for similarity of different polygons.
- Applies Basic Proportionality Theorem and its converse in solving daily life problems.
- Explains the similarity of triangles and different polygons.
- Proves Pythagoras Theorem using similarity and other methods also.
- Demonstrates understanding of ratios in similar triangles.
- Solves problems involving missing sides using similarity.
- Solves the problems related to areas of similar triangles.
- Visualizes similarity in real-world structures and objects.
- Communicates similarity properties using geometric language.
- Establishes interconnections with mensuration and coordinate geometry and algebra also.
- Justifies each step in triangle proofs clearly.
- Applies proportionality to solve geometry-based reasoning questions.

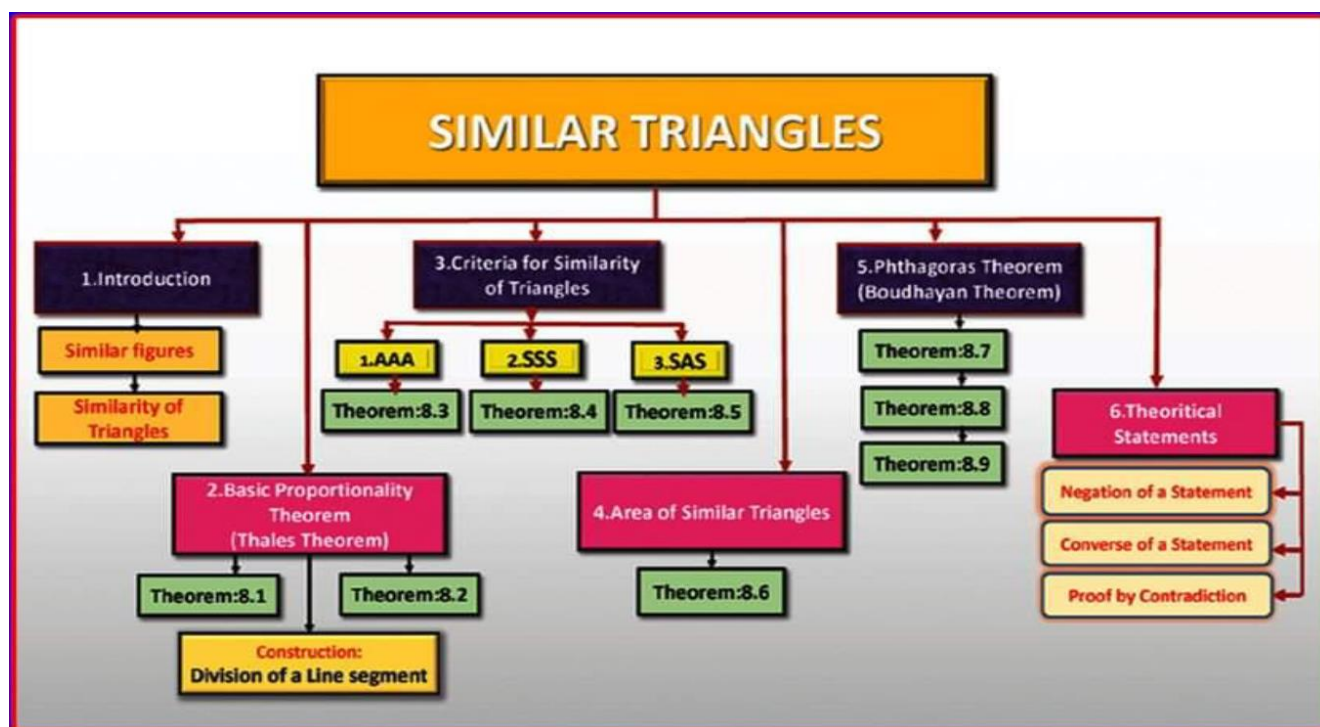
Prerequisites: Students must know the following: types of triangles and properties of triangles, properties of different quadrilaterals, transversal and pair of parallel lines (relation among the different angles formed), Basic Geometric Concepts, congruency of triangles, ratio and proportion.

Number of allotted periods: 16Periods.

Unit/Lesson Name	Sub-topics	Teaching Periods	Remarks
8. Similar Triangles	1.Introduction and Relevance of the lesson	1	
	2. Similar figures, Similar polygons, Similar triangles	2	

3. Basic Proportionality theorem and its converse	1	
4. Exercise – 8.1	2	
5. Criterion for similarity of triangles	1	
6. Construction of similar triangles	1	
7. Exercise – 8.2	2	
8. Areas of similar triangles	1	
9. Exercise – 8.3	1	
10. Pythagoras theorem and its converse	1	
11. Exercise – 8.4	2	
12. Slip test/Revision	1	
TOTAL	16	

CONCEPT MAP:



Teaching Resources: Chart of criterion for similarity of triangles, Chart showing Pythagoras Theorem

ICT TOOLS: GeoGebra, LMS App (IFP), DIKSHA App

Teaching Notes:

TEACHER'S REFLECTIONS:

9. TANGENTS AND SECANTS TO A CIRCLE

Class: X

Name of the Unit: 9. Tangents and Secants to a circle

Learning Outcomes: The learner

- Defines tangent and secant in relation to a circle.
- Proves that tangent is perpendicular to the radius.
- Verifies the lengths of tangents from a point are equal.
- Constructs tangents to a circle in different contexts, i.e., (i) from a point on the circle, (ii) from an external point, and (iii) when the angle between two tangents and the distance from the centre is given.
- Justifies results with proper logical steps and construction.
- Applies tangent properties to solve geometrical problems and daily life related problems.
- Communicates understanding of theorems using figures and statements.
- Connects circle theorems with triangle and quadrilateral concepts.
- Solves reasoning-based geometry problems involving circles.
- Visualizes tangents in real-life applications (e.g., wheel, clock).
- Justifies results with proper logical steps and construction.
- Solves geometrical and real-life problems related to the area of a circle using concepts such as sectors, segments, and other related properties

Prerequisites: Students must know the following:

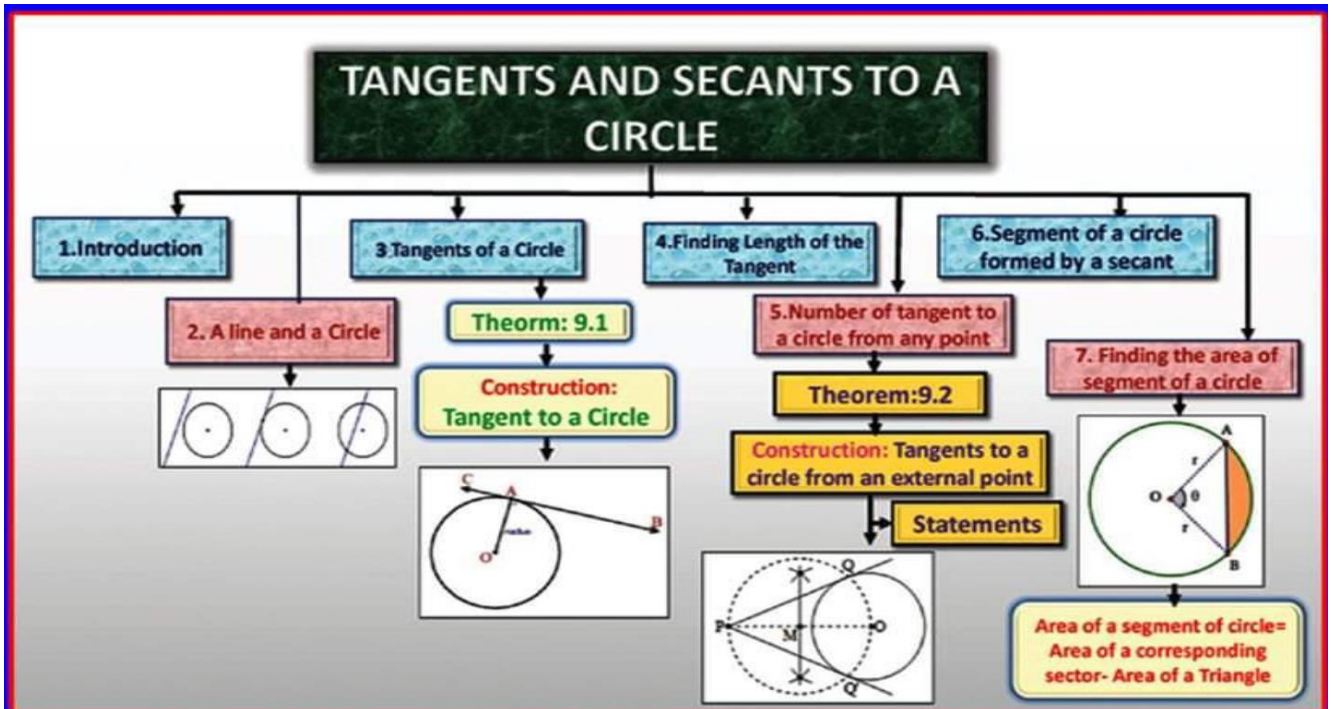
Circle and its properties, Sector, area, triangles, quadrilaterals, Pythagoras theorem,

Number of allotted periods: 9 Periods.

Unit/Lesson Name	Sub-topics	Teaching Periods	Remarks
9. Tangents and Secants to a circle	1. Introduction and relevance of the lesson	1	
	2. Tangents of a circle and Exercise – 9.1	1	
	3. Number of tangents to a circle, Construction of tangents to a circle from an external point	1	
	4. Exercise – 9.2	2	
	5. Finding the area of segment of a circle	1	

	6. Exercise – 9.3	2	
	7. Revision/Slip Test	1	
	TOTAL	9	

CONCEPT MAP:



Teaching Resources: Charts of tangents and secants to a circle, charts of segments of a circle, geometry box

ICT TOOLS: GeoGebra, Robocompass

Teaching Notes:

TEACHER'S REFLECTIONS:

10. MENSURATION

Class: X

Name of the Unit: 10. Mensuration

Learning Outcomes: The learner

- Explains the formulas related to total surface area, lateral/curved surface area and volume of cube, cuboid, cone, cylinder, sphere, hemisphere
- Solves the problems related to surface area and volume of cube, cuboid, cone, cylinder, sphere, hemisphere.
- Finds relations between the surface areas of different shapes and volumes.
- Applies formulas to solve real-life problems (water tanks, vessels, etc.).
- Visualizes and compares different 3D shapes.
- Estimates volume and surface area in approximate real-world contexts.
- Justifies solution steps using formulas and conversions.
- Solves the daily life contextual problems on finding surface area and volumes related to combination of different solids and conversion of solids.
- Applies concept of unit conversion (cm^2 to m^2 , etc.) accurately.
- Connects the mensuration concepts within mathematics and inter connects with other subjects and real-life situations.
- Represents the different contextual combinations of solids through diagrams and depicts the measurements. And interprets word problems into geometrical models.

Prerequisites: Students must know the following:

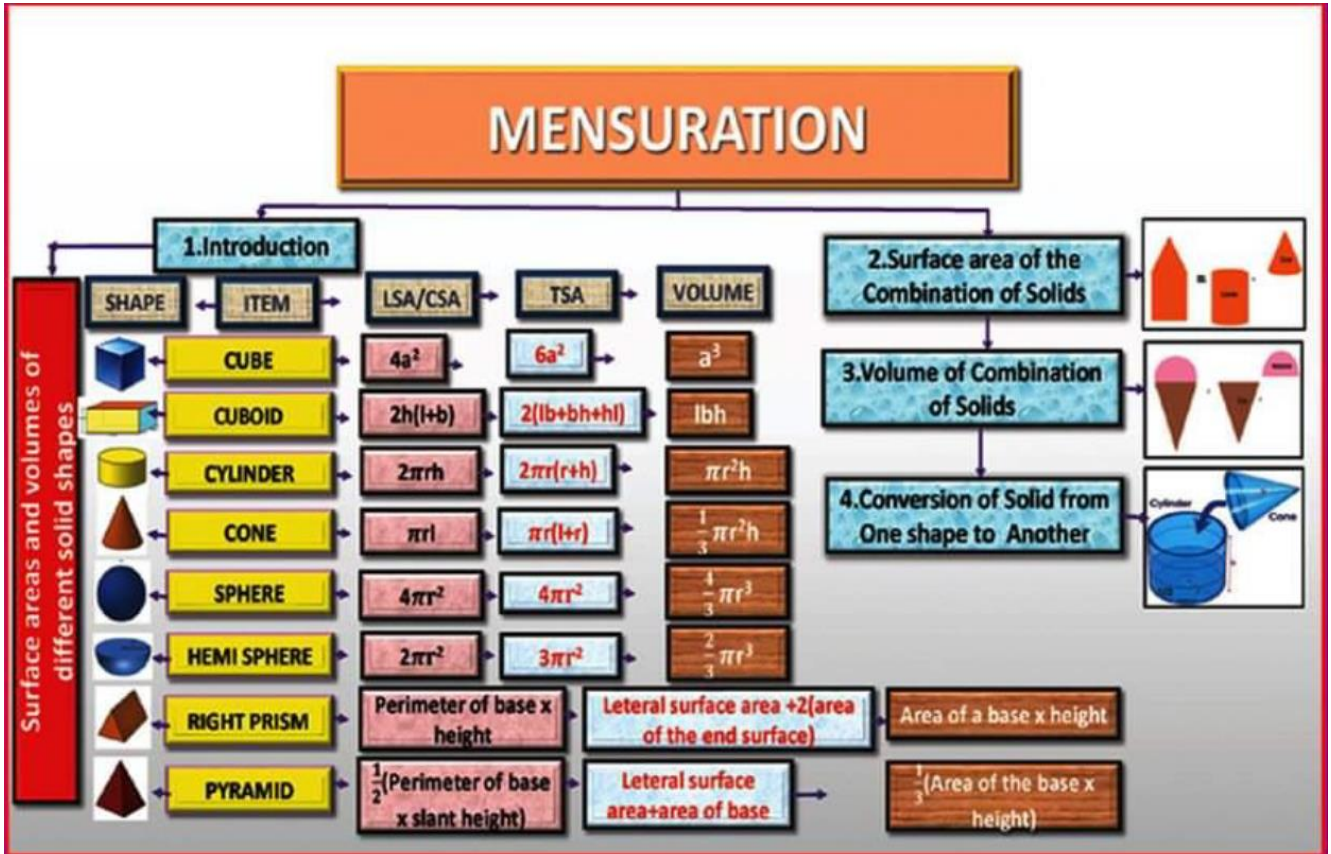
3-D shapes, surface area, volume

Number of allotted periods: 10 Periods.

Unit/Lesson Name	Sub-topics	Teaching Periods	Remarks
10. Mensuration	1. Introduction and relevance of the lesson	1	
	2. Exercise – 10.1	1	
	3. Surface area of the combination of solids	1	
	4. Exercise – 10.2	1	
	5. Volume of combination of solids	1	
	6. Exercise – 10.3	1	
	7. Conversion of solids from one shape to another	1	

	8. Exercise – 10.4	2	
	9. Revision/Slip Test	1	
	TOTAL	10	

CONCEPT MAP:



Teaching Resources: Models of 3-D shapes, chart of formulae.

ICT TOOLS: GeoGebra, IFP-MATHS TOOLS, NCTM illuminations of cuboid etc, PhET Simulations, canva, QUIZZES etc.

Teaching Notes:

TEACHER'S REFLECTIONS:

11. TRIGONOMETRY

Class: X

Name of the Unit: 11. Trigonometry

Learning Outcomes: The learner

- Determines the trigonometric ratios (sine, cosine, tangent, cosecant, secant, and cotangent) of an acute angle in a right-angled triangle using appropriate representations such as figures and tables.
- Develops an understanding of the geometrical meaning of trigonometric ratios through visualization and representation on right-angled triangles.
- Finds the values of trigonometric ratios for standard angles: 0° , 30° , 45° , 60° , and 90° , with logical proofs using equilateral and isosceles right-angled triangles.
- Represents the trigonometric values in tabular form and interpret their patterns and relationships.
- Understands and use complementary angle relationships (e.g., $\sin(90^\circ - A) = \cos A$, $\tan(90^\circ - A) = \cot A$, etc.) in solving problems.
- Explains the logic behind these relationships using real-life or geometrical representations.
- Derive and verify fundamental trigonometric identities:
- Uses these identities to solve algebraic and geometric problems and justify the steps with logical reasoning.
- Expresses the one trigonometric ratio in terms of other trigonometric ratios.
- Solves real-life problems and mathematical situations involving heights and distances using trigonometric concepts (when angle of elevation or depression is known).
- Makes meaningful connections between trigonometric concepts and practical applications in fields like construction, astronomy, engineering, etc.

Prerequisites: Students must know the following:

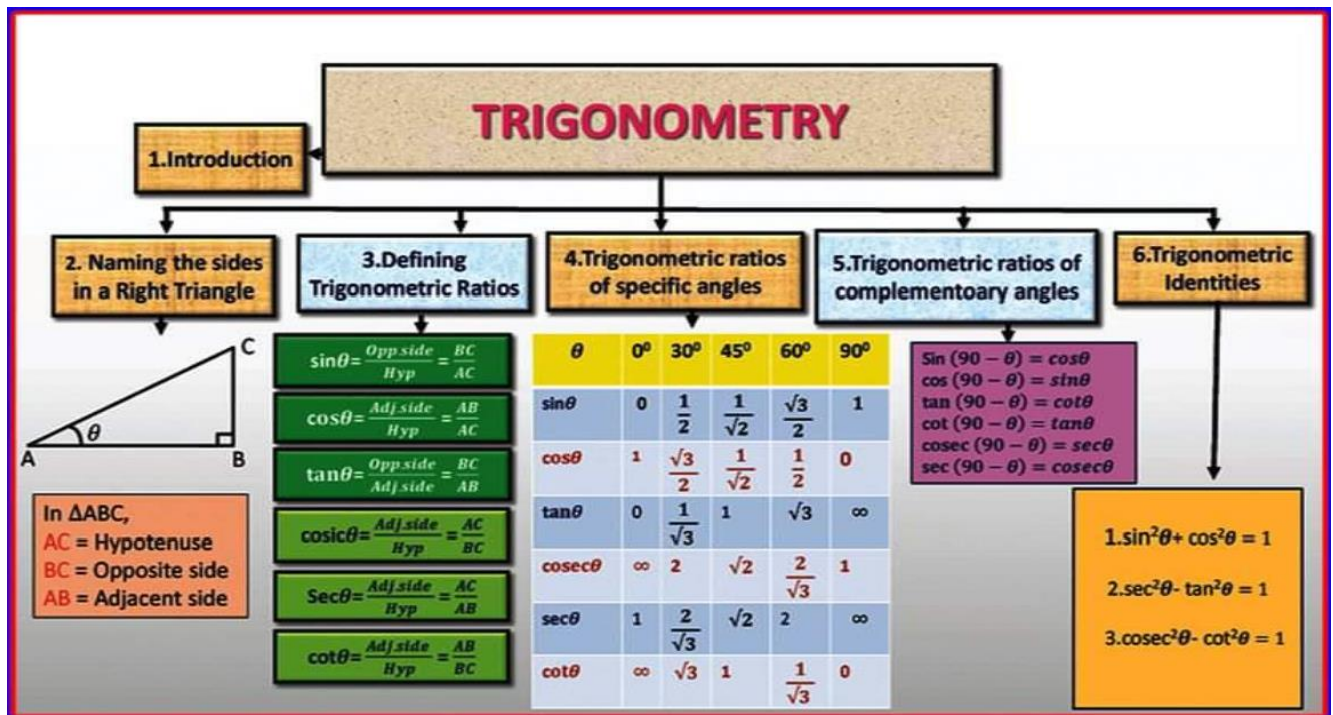
Types of triangles, properties of a right-angled triangle, Pythagoras theorem, Pythagorean triples, Types of angles algebraic identities, rules of solving an equation.

Number of allotted periods: 11Periods.

Unit/Lesson Name	Sub-topics	Teaching Periods	Remarks
11.Trigonometry	1.Introduction and Relevance of the lesson.	1	
	2.Trigonometric ratios	1	
	3. Exercise – 11.1	1	
	4. Trigonometric ratios of specific angles	1	

	5. Exercise – 11.2	1	
	6. Trigonometric ratios of complementary angles	1	
	7. Exercise – 11.3	1	
	8. Trigonometric Identities	1	
	9. Exercise – 11.4	2	
	10. Revision/Slip Test	1	
	TOTAL	11	

CONCEPT MAP:



Teaching Resources: Charts of Trigonometric Ratios, Trigonometric ratios of specific angles, Trigonometric ratios of complementary angles, Trigonometric identities

ICT TOOLS: GeoGebra

Teaching Notes:

TEACHER'S REFLECTIONS:

12. APPLICATIONS OF TRIGONOMETRY

Class: X

Name of the Unit: 12. Applications of Trigonometry.

Learning Outcomes: The learner

- Solves problems involving height and distance.
- Applies trigonometric ratios to find unknown measures.
- Identifies angle of elevation and depression in a diagram.
- Visualizes real-world scenarios (tower, tree, shadow) in triangle models.
- Converts word problems to geometrical forms.
- Communicates understanding using sketches.
- Justifies use of specific ratios in a context.
- Links trigonometry with geometry and real-life measurements.
- Estimates heights and distances using practical applications.
- Applies reasoning to select correct ratio based on angle and sides

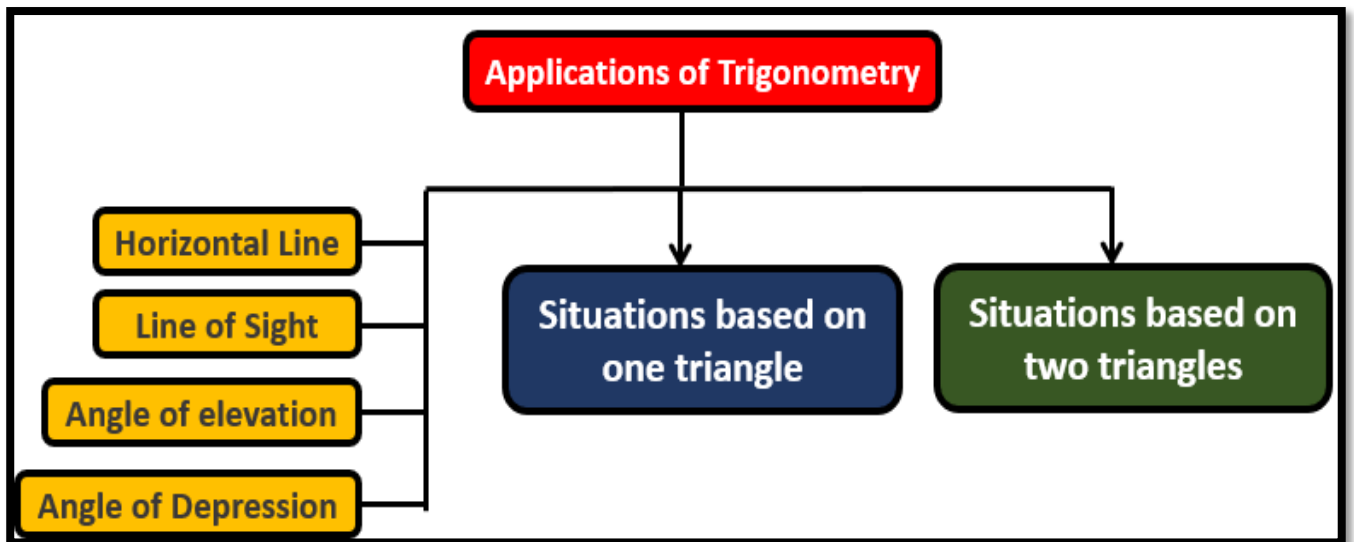
Prerequisites: Students must know the following:

Triangles, Trigonometric ratios, Trigonometric ratios of specific angles.

Number of allotted periods: 6 Periods.

Unit/Lesson Name	Sub-topics	Teaching Periods	Remarks
12.Applications of Trigonometry	1.Introduction and Relevance of the lesson.	1	
	2. Model problems and examples based on one triangle	1	
	3. Exercise – 12.1	1	
	4. Model Problems and examples based on two triangles	1	
	5. Exercise – 12.2	1	
	6. Revision/Slip Test	1	
	TOTAL		15

CONCEPT MAP:



Teaching Resources: Chart showing horizontal line, line of sight, angle of elevation, angle of depression

ICT TOOLS: GeoGebra, IFP (LMS App)

Teaching Notes:

TEACHER'S REFLECTIONS:

13. PROBABILITY

Class: X

Name of the Unit: 13. Probability

Learning Outcomes: The learner

- Defines experiment, outcome, event, and sample space.
- Calculates probability of simple events.
- Differentiates between certain, likely, and impossible events.
- Applies probability to coins, dice, cards, and daily events.
- Communicates results in terms of fractions or decimals.
- Justifies fairness or unfairness in games.
- Connects probability with set theory and statistics.
- Interprets and explains results of experiments.
- Visualizes experiments through tree diagrams.
- Develops reasoning for non-uniform events.
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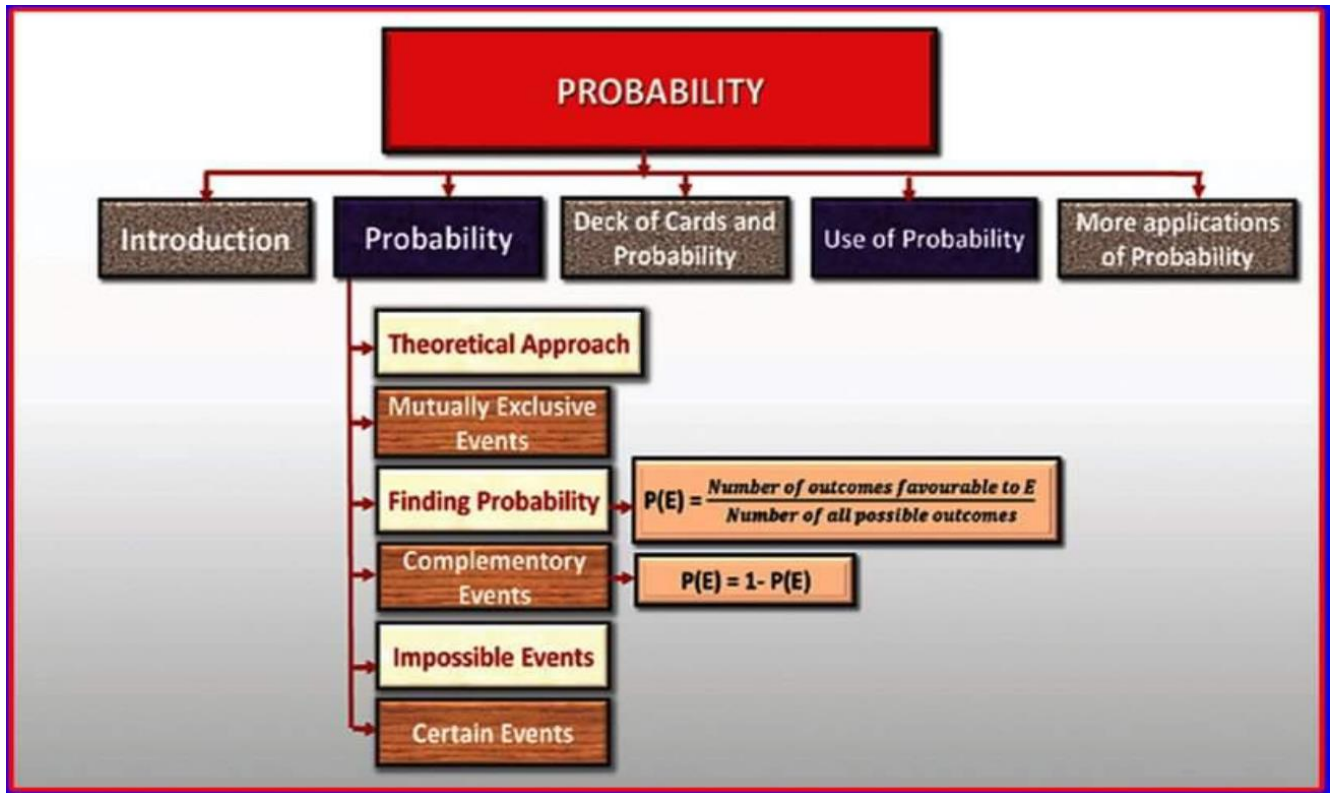
Prerequisites: Students must know the following:

More likely, no chance, equal chance, impossible, sum, dice, head and tails of a coin, less likely, odd numbers, even numbers, prime numbers, natural numbers, whole numbers.

Number of allotted periods: 6 Periods.

Unit/Lesson Name	Sub-topics	Teaching Periods	Remarks
13. Probability	1.Introduction and Relevance of the lesson	1	
	2.Mutually Exclusive Events, Complementary Events and Exercise – 13.1	1	
	3. Applications of Probability	1	
	4. Exercise – 13.2	2	
	5. Revision/Slip Test	1	
	TOTAL		6

CONCEPT MAP:



Teaching Resources: Chart of types of events, dice, deck of cards, coins

ICT TOOLS: GeoGebra, IFP (LMS App)

Teaching Notes:

TEACHER'S REFLECTIONS:

14. STATISTICS

Class: X

Name of the Unit: 14. Statistics

Learning Outcomes: The learner

- Constructs cumulative frequency tables.
- Draws ogives (more than and less than).
- Estimates median using graphical method.
- Interprets data through curves and graphs.
- Calculates mean, median, and mode using appropriate methods.
- Compares data sets using visual tools.
- Communicates interpretations using correct statistical language.
- Connects statistics with probability and algebra.
- Visualizes real-life data in graphical form.
- Applies statistics in socio-economic contexts (population, marks, etc.).

Prerequisites: Students must know the following:

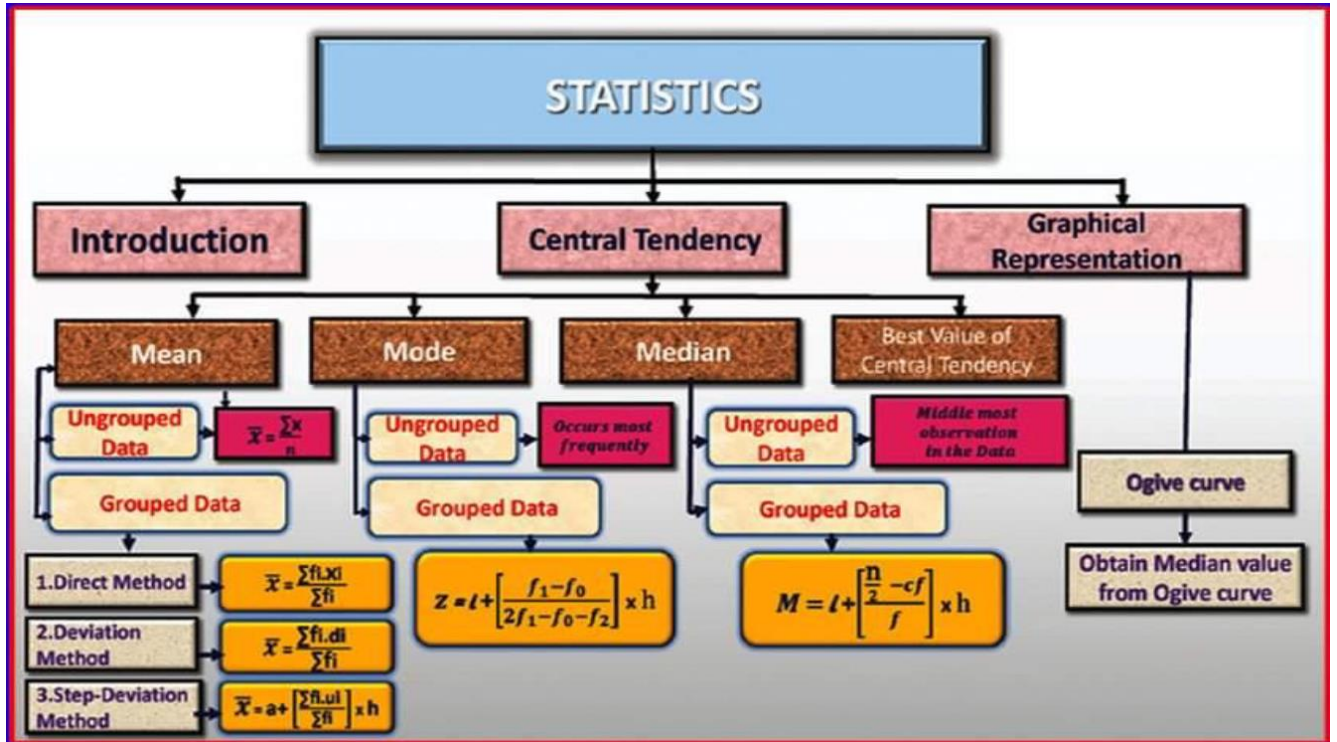
Mean, Median and mode of ungrouped data.

Number of allotted periods: 12 Periods.

Unit/Lesson Name	Sub-topics	Teaching Periods	Remarks
14. Statistics	1. Introduction and relevance of the lesson.	1	
	2. Mean of grouped data by direct method and relevant problems in Exercise – 14.1	1	
	3. Mean of grouped data by Deviation Method and relevant problems in Exercise – 14.1	1	
	4. Mean of grouped data in step deviation method and relevant problems in Exercise – 14.1	1	
	5. Mode of grouped data	1	
	6. Exercise – 14.2	2	
	7. Median of grouped data	1	

	8. Exercise – 14.3	1	
	9. Ogive curves	2	
	10. Revision/Slip Test	1	
	TOTAL	12	

CONCEPT MAP:



Teaching Resources: Charts of formulae, Charts of ogive curves.

ICT TOOLS: GeoGebra, IFP (LMS App)

Teaching Notes:

TEACHER'S REFLECTONS: