Directorate of Education, GNCT of Delhi
Annual Syllabus (Part-I)
Class-IX (2026-27)
Subject: Mathematics

Book	Chapter No. and Name	Key Concepts	Relevant CGs	Competencies
Part-I	**Chapter – 1 Orienting Yourself: The Use of Coordinates**	• Brief history of coordinate geometry • The 2-D Cartesian coordinate system • Distance between two points in the 2-D plane • Midpoint of the line segment between two points in the 2-D plane	CG-4, C-4.5, CG-9	The student will be able to: • Specify locations and the position of one point relative to another point using coordinates. • Represent a floor plan on a grid using coordinates. • Compute the distance between two points using coordinates. • Determine whether three points lie in a straight line using coordinates. • Compute the position of the midpoint of a line segment using coordinates. • Check whether a triangle is right angled using coordinates. • Apply computational thinking to model situations on the coordinate plane and verify geometric properties through systematic reasoning.
Part-I	**Chapter – 2 Introduction to Linear Polynomials**	• Algebraic expressions • Definition of a polynomial • Degree of a polynomial • Introduction to linear polynomials and applications • Exploring linear patterns • Modelling linear growth and linear decay • Linear relationships • Visualising linear relationships • Slope and y-intercept of a line $y = ax + b$	CG-3, C-3.2, CG-9	The student will be able to: • Understand the meaning of an algebraic expression. • Define a polynomial. • Identify the degree, terms and coefficients of terms in a polynomial. • Model linear growth and decay using linear polynomials. • Explain and identify patterns in linear relationships. • Identify the slope and y-intercept of a linear equation in two variables. • Graph a linear equation in two variables. • Use computational thinking to identify patterns, construct linear expressions, and systematically represent and analyse linear relationships using equations and graphs.

Part-I	**Chapter – 3 The World of Numbers**	• Introduction to rational numbers • Representation of rational numbers on the number line • Density of rational numbers and its proof • Finding rational numbers between any two rational numbers • Decimal representation of rational numbers • Introduction to irrational numbers • Proof of irrationality of√2 and √3 • The square root spiral	CG-1, C-1.1, CG-9	The student will be able to: • Understand the concept of a rational number. • Represent rational numbers on the number line. • Understand the properties of rational numbers. • Explain the concept of density of rational numbers. • Compute decimal representation of rational numbers. • Understand the concept of irrational numbers. • Prove the irrationality. • Construct the square root spiral. • Apply computational thinking to represent rational and irrational numbers through algorithms and visual models, generate decimal expansions systematically, and reason about numbers using step-by-step logical procedures.
Part-I	**Chapter – 4 Exploring Algebraic Identities**	• Revisiting algebraic identities • Visualising identities using geometrical models • Factorisation of algebraic expressions using identities • More identities and their applications • Visualising factorisation of quadratic expressions through algebra tiles and without using algebra tiles • Finding new identities • Simplifying rational expressions	CG-7, C-7.2, CG-9	The student will be able to: • Visualise algebraic identities using geometric models. • Determine the factors of algebraic expressions using identities. • Interpret factors of quadratic expressions through geometric models. • Find simplified versions of rational expressions. • Use computational thinking strategies, such as decomposition and step by step procedures to visualise algebraic identities, factor expressions, and simplify rational expressions.

Part-I	**Chapter – 5 I'm Up and Down, and Round and Round**	• Practical applications and uses of circles • Definitions related to a circle — centre, diameter, and radius • Chords and the angles they subtend • Midpoints and perpendicular bisectors of chords • Distance of chords from the centre • Subtended angles by an arc • Cyclicity of points	CG-4, C-7.3, CG-9	The student will be able to: • State the definition of a circle. • Explain the meanings of the terms 'chord', 'diameter', 'radius', 'arc', 'segment', and 'sector'. • Explain why there exists a unique circle through three non-collinear points. • Construct the circum-circle and circum-centre of a triangle. • Describe the location of the circum-centre for acute, obtuse, and right-angled triangles. • Explain what 'angle subtended by an arc at the centre' means. • Explain why 'equal chords subtend equal angles at the centre'. • Explain why 'chords that subtend equal angles at the centre are equal'. • Explain why 'the line from the centre of a circle to the midpoint of a chord is perpendicular to the chord'. • Explain why 'a perpendicular from the centre to a chord bisects the chord'. • State the relationship between length of a chord and its distance from the centre of the circle. • Explain why 'equal chords are equidistant from the centre (and conversely)'. • Explain why 'among unequal chords, the longer chord is closer to the centre'. • Explain why 'the diameter is the longest chord'. • Explain why 'the angle subtended by an arc at the centre is double the angle subtended by the arc at any point on the remaining part of the circle'. • Explain why 'angles in the same segment of a circle are equal'. • Explain why 'the angle in a semi circle is a right angle'. • Determine when four given points are concyclic. • Explain why 'a quadrilateral with supplementary opposite angles is cyclic, and conversely'. • Explain how circular wheels have influenced transport, farming, building, and technology. • Identify cultural motifs involving circles, for example, the Dharmachakra, Ashoka Chakra, Sudarshan Chakra. • Use computational thinking to breakdown circle-related problems, apply geometric rules step-by-step, and verify properties of figures, such as chords, angles, and cyclic quadrilaterals through systematic reasoning.

Part-I	**Chapter – 6 Measuring Space: Perimeter and Area**	• Perimeter of shapes • Perimeter of a circle: Introduction to Pi and its irrationality • Length of an arc • Area of shapes: rectangles, parallelograms, and triangles • Heron's formula • Squaring a rectangle :Proof from Baudhayana's Sulbasutras • Area of a circle: derivation • Area of the sector of a circle • Brahmagupta's formula for area of acyclic 4-gon • Heron's formula as a special case of Brahmagupta's formula	CG-5, C-5.1, CG-9	The student will be able to: • Define perimeter as the length around the boundary of any shape. • Explain that the circumference to diameter ratio is constant for all circles. • List historical approximations to π (from Archimedes, Aryabhata, and ZuChongzhi). • Compute the circumference of a circle and the length of an arc. • Apply ideas of circle perimeter and arc length to real-world contexts. • Explain why a median of a triangle divides it into two triangles of equal area. • Use Heron's formula to compute the area of a triangle from its sides. • Explain the classical problem of 'squaring' a given shape. • Explain how ancient civilisations approximated the area of a circle. • Compute the area of a circle using the formula. • Explain and use the formula for area of a sector of a circle. • Solve problems on areas of sectors and segments of circles. • State Brahmagupta's formula for the area of a cyclic quadrilateral in terms of its sides. • Explain why Heron's formula is a 'special case' of Brahmagupta's formula. • Explain the notion of 'special case' and 'generalisation' in mathematics. • Use computational thinking to breakdown shapes; apply step-by-step methods to calculate perimeter and area, recognise patterns across formulae, and understand generalisation and special cases in geometry.

Part-I	**Chapter – 7 The Mathematics of Maybe: Introduction to Probability**	• Concept of probability and randomness • The probability scale • Empirical probability: analysing statistical data and performing experiments • Theoretical probability: sample space and events • Representing probability through tree diagrams and tables	CG-6, C-6.2, CG-9	The student will be able to: • Understand the concept of randomness. • Describe the likelihood of an event using the probability scale. • Estimate the empirical probability of the occurrence of an event by analysing statistical data. • Define theoretical probability of an event. • Apply the definition of theoretical probability to compute the probability of an event. • Compute probability of events with the help of tree diagrams and tables. • Use computational thinking strategies, such as pattern recognition and simulation, to model random experiments and estimate probabilities.

Part-I	**Chapter – 8 Predicting What Comes Next: Exploring Sequences and Progressions**	• Introduction to sequences • Explicit or general rule of a sequence • Recursive rule of a sequence • Arithmetic Progressions • (AP): nth term, visualising an AP, and practical contexts leading to APs • Sum of the first n natural numbers • Geometric Progressions (GP): nth term, visualising a GP, and practical contexts leading to GPs • Applications of GP in fractals • Tower of Hanoi puzzle	CG-11, C-8.1, CG-9	The student will be able to: • Understand the concept of a sequence of numbers. • Identify the pattern in a sequence and predict the next few terms. • Determine the recursive and explicit rules for different sequences. • Obtain the terms of sequence given its recursive and explicit rule. • Identify Arithmetic Progressions (AP). • Determine the nth term of an AP. • Visualise an AP graphically. • Identify Geometric Progressions (GP). • Determine the nth term of a GP. • Visualise a GP graphically. • Analyse attributes of fractals using GP. • Solve the Tower of Hanoi puzzle. • • Use computational thinking to identify patterns, write step-by-step rules, and model patterns in sequences and progressions.

- The above content must be completed for Mid Term Examination by **5th September, 2026**.
- Mental Maths & Maths Lab Activities
- Revision of syllabus for Mid Term Examination.

MID TERM EXAMINATION