JKBOSE Class 9 Maths Syllabus

IST TERM COURSE

Marks : 100 *Time : 3 hours*

Unit	Chapters	Marks
1.	Number System	20
2.	Polynomials	20
3.	Co-ordinate Geometry	08
4.	Linear equations in two variables	10
5.	Lines and angles	12
6.	Triangles	20
7.	Constructions	10

Unit 1 Number System — Marks 20

Real Numbers: Review of representation of natural numbers, integers, rational numbers on the number line. Representation of terminating / non terminating recurring decimals on the number line through successive magnification. Rational numbers as recurring numbers as recurring / terminating decimals. Examples of non recurring/non terminating $\sqrt{2}, \sqrt{3}, \sqrt{5}$ etc.

Existence of non-rational numbers(irrational numbers) such as $\sqrt{2}, \sqrt{3}$ and their representation on the number line.

Explaining that every real number is represented by a unique point on number line and conversely, every point on number line represents a unique real number Existence of $\sqrt{x}$ for a given positive real number x(visual proof to be emphasized). Definition of n^{th} root of a real number.

Recall of laws of exponents with integral powers, Rational exponents with positive real bases (to be done by particular cases, allowing learners to arrive at the general laws).

Rationalization (with precise meaning) of real numbers of the type (and their combinations)

$\frac{1}{a+b\sqrt{x}}$ and $\frac{1}{\sqrt{x}+\sqrt{y}}$ where 'x' and 'y' are natural numbers and a and b are integers.

Unit II Polynomials — Marks 20

Definition of a polynomial in one variable, its coefficients, with examples and counter examples, its terms, Zero polynomial. Degree of a polynomial, constant , linear , quadratic, cubic polynomials, monomials, binomials, trinomials. Factors and multiples, Zeros/roots of a polynomial / equation. Division of a polynomial by polynomial. State and motivate the Remainder Theorem with examples and analogy to integers. Statement and proof of the Factor Theorem. Factorization of ax^2+bx+c, $a \neq o$ where a ,b ,c , are real numbers and of cubic polynomials using the Factor Theorem.

Recall of algebraic expressions and identities.

Further identities of the type

$(x+y+z)^2=x^2+y^2+z^2+2xy+2yz+2zx$

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$(x \pm y)^3 = x^3 \pm y^3 \pm 3xy\,(x \pm y)$

$x^3+y^3+z^3-3xyz=(x+y+z)\,(x^2+y^2+z^2-xy-yz-zx)$

and their use in factorization of polynomials. Simple expressions reducible to these polynomials.

Unit III

Co-ordinate Geometry

Marks 08

The Cartesian plane, Coordinates of a point, names and terms associated with co-ordinate plane (x-axis, y-axis, origin, components of a point, Quadrants), plotting points in the plane, graph of a linear equations as examples; focus on linear equations of the type ax+by+c=0 by writing it as y=mx+c and linking it with chapter on linear equations in two variables.

Unit IV

Linear equation in two variables

Marks 10

Recall of linear equations in one variable. Introduction to the equation in two variables. Prove that a linear equation in two variables has infinitely many solutions and justify their being written as ordered pairs of real numbers, plotting them and showing that they seem to lie on a line. Examples, problems from real life, including problems on ratio and proportion and with algebraic and graphical solution being done simultaneously.

Unit V

Marks 12

Lines and Angles

Introduction to Euclids Geometry, the five postulates of Euclid, Equivalent version of the fifth postulate, Relationship between Axiom and theorem.

1. Given two distinct point, there exists one and only one line through them.
2. Two distinct line can not have more than one point in common.
3. If a ray stands on a line, then the sum of two adjacents angles so formed is 180 degree and the converse.
4. If two line intersect, the vertically opposite angles are equal.
5. Results on corresponding angles, alternate angles, interior angles when a transversal intersect two parallel lines.
6. Lines which are parallel to a given line are parallel.
7. The sum of the angles of a triangle is 180°
8. If one side of a triangle is produced, the exterior angles so formed is equal to the sum of the two interior opposite angles.

Unit VI

Marks 20

Triangles :

1. Two triangles are congruent if any two sides and the included angle of one triangle is equal to any two sides and their included angle of the other triangles (S.A.S Congruency).
2. Two triangles are congruent if any two angles and the included side of one triangle is equal to two corresponding angles and the included side of the other triangle (ASA Congruency).

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3. Two triangles are congruent if the three sides of one triangle are equal to three corresponding sides of the other triangles (SSS Congruency).
4. Two right triangles are congruent if the hypotenuse and one of the other two sides of one triangles is equal to the hypotenuse and the corresponding sides of the other triangle (RHS Congruency).
5. Angles opposite to equal sides of a triangle are equal.
6. Sides opposite to equal angles of a triangle are equal.
7. Triangle inequalities and relation between angle and facing side ; inequalities in a triangle.

Unit VII **Marks 10**

Constructions

1. Construction of bisectors of a line segment and 60°, 90°, 45° angles etc.
2. Construction of equilateral traingles.
3. Construction of a triangle given its base, sum/difference of the other two side and one base angle.
4. Construction of a traingle of given perimeter and base angles. .

ASSESSMENT OF FIRST TERM COURSE

The First Term course shall carry a weightage of 100 marks. The performance of students during the First Term shall be assessed through 02 Unit tests each of 20 marks and a Term Test of 60 marks. The Unit and Term tests (s) are to be given as per the scheme of Continuous and Comprehensive Evaluation introduced by the Board at the Secondary Stage.

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TERM II

Unit VIII	Logarithm	15 marks
Unit IX	Quadrilaterals	15 marks
Unit X	Area of parallelograms & Traingles	10 marks
Unit XI	Circles	25 marks
Unit XII	Mensuration	20 marks
Unit XIII	Statistics	15 marks

Unit VIII

Marks 15

Definition, Laws of logarithm i.e. $\text{Log}_a xy=\log_a x+\log_a y, \log\frac{x}{y}=\log_a x-\log_a y, \log_a x^y=y\log_a x$ where a>0, Logarithms to Base 10, Standard from decimal, characteristics and Mantissa, finding N where log N is given. Use of Logarithms in simple Numerical problems.

Unit IX

Marks 15

Quadrilateral

1. Diagonal divides a parallelogram into two congruent triangles.
2. In a parallelogram opposite sides are equal and conversely.
3. In a parallelogram opposite angles are equal and conversely
4. A quadrilateral is a parallelogram if a pair of its opposite sides are equal and parallel
5. In a parallelogram, the diagonals bisect each other and conversely.
6. In a triangle the line segment joining the mid points of any two sides is parallel to the third side and its converse.

Uni X

Marks 10

Area:

Review, concept of area, recall area of a rectangle.

1. Parallelograms on the same base and between the same parallels have the same area.
2. Triangles on the same base and between the same parallels have the same area and its converse.

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Unit XI

25 Marks

Circles : Definition to circles (with examples) radius, circumference, diameter, chord, arc, subtended angle.

1. Equal chords of a circle subtend equal angles at the centre and its converse.
2. The perpendicular from the centre of a circle to a chord bisects the chord and conversely.
3. There is one and only one circle passing through their given non-collinear points.
4. Equal chords of a circle (or of congruent circles) are equidistant from the centre (s) and conversely.
5. The angle subtended by an arc at the centre is double the angle subtended by it at any point on the remaining part of the circle.
6. Angles in the same segment of a circle are equal.
7. If a line segment joining two points subtends equal angles at two other points lying on the same side of the line containing the segment, the four points lie on a circle.
8. Sum of the either pair of the opposite angles of a cyclic quadrilateral is 180 degree and its converse.

Unit XII

Marks 20

Mensuration

1. Area of traingle using Herons's formula (without proof) and its application in finding the area of a Quadrilateral

2. Surface area and volumes.

Surface areas and volumes of cubes, cuboids, Spheres (including hemispheres) and right circular cylinders/ cones.

Unit XIII.

Marks 15

Statistics

Introduction to statistics, collection of data, presentation of data, tabular form, ungrouped , grouped , bar graphs, histogram (with varying base lengths) frequency polygons. qualitative analysis of data to choose the correct form of presentation for the collected data, Mean (arithmetic mean), Median, Mode of ungrouped data.

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Assessment of IInd Term Course

The assessment of IInd Term shall be made through one Unit test of 20 marks and a Term Test of 80 marks as envisaged in the Continuous and Comprehensive Evaluation Scheme introduced by the Board at Secondary Stage.

Book Prescribed:

Mathematics: - ***A Text Book for Class IX published by Jammu and Kashmir State Board of School Education.***

COURSE WORK
(Assessment/Project Work)

The course work component has been designed to provide schools with an alternative means of assessment of those objectives as lend themselves to testing by means other than timed written paper. The course work is intended to provide a framework for developing an ability to solve problems for encouraging investigation activities. The course work component allows particular emphasis on objectives, which are difficult to test in timed written papers.

Procedure

1. Every Student should at least submit one project and one investigation report to be assessed by the teachers each term.
2. Course work shall involve 15 hours work. The class time should be allocated accordingly so that the teacher is able to monitor student's work.
3. The course work will be assessed in grades to be reflected in the certificate of achievement to be issued by the school as laid down by the Board under Continuous and Comprehensive Evaluation Scheme.

4. Suggested Topics

(i) Finding area of classroom, school campus and making a project indicating cost of fencing/walling, etc.

(ii) Representing statistical data graphically.

(iii) Scale drawing, maps/model making, etc.

(iv) Working of a Computer.

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Types of questions to be set :

First Term — ***60 marks***

1.	Two 8 marks questions with internal and parallel choice	2×8=16
2.	Four 5 marks questions with internal & parallel choice	4×5=20
3.	Six 3 marks questions	6×3=18
4.	Six 1 mark questions	6×1=6

Second Term — ***80 marks***

1.	Three 8 marks questions with internal & parallel choice	3×8 = 24
2.	Five 5 marks questions with internal & parallel choice	5×5 = 25
3.	Eight 3 marks questions	8×3 = 24
4.	Seven 1 mark questions	7×1 = 7

Note:

1. The students can use simple electronic calculators. Electronic calculators having exponential and trignometric functions shall not be allowed.
2. Trignometrical /Log tables, if required, be provided to the students. No other Mathematical or Statistical table will be allowed to be used.

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