

Reduced Syllabus : Class- IX : Mathematics : 80 Marks : 2020-2021**Deleted Portion of Syllabus**

Unit / Chapter	Deleted Topics
UNIT-I : NUMBER SYSTEMS :	
1. Real Numbers	1. Representation of rational (Terminating, non-terminating) and irrational numbers on the number line. 3. Definition of n^{th} root of a real number.
UNIT-II : ALGEBRA :	
1. Polynomials	# Proof of the Remainder theorem and Factor theorem. # Factorization of cubic polynomials using the factor theorem. # Verification of the identity $x^3 + y^3 + z^3 - 3xyz = (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)$ and its use in factorization of polynomials.
2. Linear Equations in two variables	# Examples, Problems from real life including problems on Ratio and Proportion and with algebraic and graphical solutions being done simultaneously.
UNIT-III : COORDINATE GEOMETRY : No Portion deleted	
UNIT-IV : GEOMETRY	
1. Introduction to Euclid's Geometry	Totally deleted
2. Lines & Angles	No Portion deleted
3. Triangles	7. Triangle inequalities and relation between angle and facing side in equalities in triangles.
4. Quadrilaterals	No Portion deleted
5. Area	Totally deleted

6. Circles	<p>3. Motivate 3 : There is one and only one circle passin through three given non-collinear points.</p> <p>7. Motivate 7 : If a line segment joining two points subsends equal angle at two other points lying on the same side of the line containing the segment, the four points lie on a circle.</p>
7. Constructions	3. Construction : Contruction of a triangle of given perimeter and base angles.
UNIT-V : MENSURATION :	
1. Areas	1. Application of Heron's formula in finding the area of a quadrilateral.
2. Surface area and volumes	# No Portion deleted
UNIT-VI :STATISTICS	
1. Statistics	<p># Histograms (with varying base lengths)</p> <p># Frequency polygons</p> <p># Mean, median and mode of ungrouped data.</p>
2. Probability	# No Portion deleted

Blue Print of Question : Class- IX : Mathematics : 80 Marks : 2020-2021

Unit/Chapter	VSA 1 Mark	SA-I 2 Marks	SA-II 3 Marks	LA-I 4 Marks	Total Marks
1. Arithmetic (Number System)	03	01	01	--	08
2. Algebra (17)					
(a) Polynomical	01	01	01	01	10
(b) Linear equation	02	01	01	--	07
3. Co-ordinate/ Geometry (4)	01	--	01	--	04
4. Geometry (28)					
(a) Lines and angles	01	01	01	--	06
(b) Triangle	01	01	--	01	07
(c) Quadrilateral	01	01	--	01	07
(d) Circle	--	--	--	01	04
(e) Construction	01	--	01	--	04
5. Mensuration (13)					
(a) Herons formula	02	--	01	--	05
(b) Surface area and volume	04	--	--	01	08
6. Statistics & Probability (10)					
(a) Statistics.	02	--	--	01	06
(b) Probability	01	--	01	--	04
Total No. of Questions	20	06	08	06	40
Total Marks.	20	12	24	24	80

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Unit-I : NUMBER SYSTEMS

1. REAL NUMBERS

1. Review of representation of natural numbers, integers, rational numbers on the number line. Rational numbers as recurring/terminating decimals. Operations on real numbers.
2. Examples of non-recurring/non-terminating decimals. Explaining that every real number is represented by a unique point on the number line and conversely, viz. Every point on the number line represents a unique real number.
4. Rationalization (with precise meaning) of real numbers of the type $\frac{1}{a+b\sqrt{x}}$ and $\frac{1}{\sqrt{x}+\sqrt{3}}$ (and their combinations) where x and y are natural number and a and b are integers.
5. Recall of laws of exponents with integral powers. Rational exponents with positive real bases (to be done by particular cases, allowing learner to arrive at the general laws.)

Unit-II : ALGEBRA

1. POLYNOMIALS

1. Definition of a polynomial in one variable with examples and counter examples. Coefficients of a polynomial, terms of a polynomial and zero polynomial. Degree of a polynomial. Constant, linear, quadratic and cubic polynomials. Monomials, binomials, trinomials. Factors and statement. Factorization of $ax^2 + bx + c$, $a \neq 0$ where a, b and c are real numbers. Recall of algebraic expressions and identities. Verification of identities :

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

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

$$x^3 \pm y^3 = (x \pm y)(x^2 \mp xy + y^2)$$

and their use in factorization of polynomials.

2. LINEAR EQUATIONS IN TWO VARIABLES

Recall of Linear equations in one variable. Introduction to the equation in two variables. Focus on linear equations of the type $ax + by + c = 0$. Explain

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 lie on a line. Graph of linear equations in two variables.

Unit-III : COORDINATE GEOMETRY

The Cartesian plane, coordinates of a point, names and terms associated with the coordinate plane, notations, plotting points in the plane.

Unit-IV : GEOMETRY

2. LINES AND ANGLES

1. (Motivate) If a ray stands on a line, then the sum of the two adjacent angles so formed is 180° and the converse.
2. (Prove) If two lines intersect, vertically opposite angles are equal.
3. (Motivate) Results on corresponding angles, alternate angles, interior angles when a transversal intersects two parallel lines.
4. (Motivate) Lines which are parallel to a given line are parallel.
5. (Prove) The sum of the angles of a triangle is 180° .
6. (Motivate) If a side of a triangle is produced, the exterior angle so formed is equal to the sum of the two interior opposite angles.

3. TRIANGLES

1. (Motivate) Two triangles are congruent if any two sides and the included angle of one triangle is equal to any two sides and the included angle of the other triangle (SAS Congruence).
2. (Prove) Two triangles are congruent if any two angles and the included side of one triangle is equal to any two angles and the included side of the other triangle (ASA Congruence).
3. (Motivate) Two triangles are congruent if the three sides of one triangle are equal to three sides of the other triangle (SSS Congruence).
4. (Motivate) Two right triangles are congruent if the hypotenuse and a side of one triangle are equal (respectively) to the hypotenuse and a side of the other triangle. (RHS Congruence).
5. (Prove) The angles opposite to equal sides of a triangle are equal.
6. (Motivate) The sides opposite to equal angles of a triangle are equal.

4. QUADRILATERALS

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

6. CIRCLES

Through examples, arrive at definition of circle and related concepts-radius, circumference, diameter, chord arc, secant, sector, segment, subtended angle.

1. (Prove) Equal chords of a circle subtend equal angles at the center and (motivate) its converse.
2. (Motivate) The perpendicular from the center of a circle to a chord bisects the chord and conversely, the line drawn through the center of a circle to bisect a chord is perpendicular to the chord.
4. (Motivate) Equal chords of a circle (or of congruent circles) are equidistant from the center (or their respective centers) and conversely.
5. (Prove) The angle subtended by an arc at the center is double the angle subtended by it at any point on the remaining part of the circle.
6. (Motivate) Angles in the same segment of a circle are equal.
8. (Motivate) The sum of either of the pair of the opposite angles of a cyclic quadrilateral is 180° and its converse.

7. CONSTRUCTIONS

1. Construction of bisectors of line segments and angles of measure 60° , 90° , 45° etc., equilateral triangles.
2. Construction of a triangle given its base, sum/difference of the other two sides and one base angle.

Unit-V : MENSURATION

2. SURFACE AREAS AND VOLUMES

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

Unit-VI : STATISTICS & PROBABILITY

1. STATISTICS

Introduction to statistics : Collection of data, presentation of data- tabular form, ungrouped/grouped, bar graphs.

2. PROBABILITY

History, Repeated experiments and observed frequency approach to probability.

Focus is on empirical probability. (A Large amount of time to be devoted to group and to individual activities to motivate the concept; the experiments to be drawn from real- Life situations and from examples used in the chapter on statistics).