

**KENDRIYA VIDYALAYA SANGATHAN (ERNAKULAM REGION)**

**SPLIT UP OF SYLLABUS (2024 – 25)**

**CLASS : IX**

SL. NO	MONTH	NO OF WORKING DAYS	NAME OF THE CHAPTER	TEACHING AIDS/ E-CONTENT/ INNOVATIVE PRACTICES TO BE ADOPTED	TEST/EXAMINATION TO BE CONDUCTED
1	APRIL	6	<p><b>UNIT I : REAL NUMBERS</b></p> <p><b>CHAPTER 1 : NUMBER SYSTEMS (18) Periods</b></p> <p>1. Review of representation of natural numbers, integers, and rational numbers on the number line. Rational numbers as recurring/ terminating decimals. Operations on real numbers.</p> <p>2. Examples of non-recurring/non-terminating decimals. Existence of non-rational numbers (irrational numbers) such as <math>\sqrt{2}</math>, <math>\sqrt{3}</math> and their representation on the number line. 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.</p>	<p><a href="https://diksha.gov.in/play/content/do31265071542564454411492">https://diksha.gov.in/play/content/do31265071542564454411492</a></p>	
2	MAY/JUNE	27	<p><b>CHAPTER 1 : NUMBER SYSTEMS (Contd)</b></p> <p>3. Definition of nth root of a real number.</p>	<p><a href="https://diksha.gov.in/play/content/do_312579870119313408111221">https://diksha.gov.in/play/content/do_312579870119313408111221</a></p>	LAT

	JUNE	<p>4. Rationalization (with precise meaning) of real numbers of the type <math>\frac{1}{a+b\sqrt{x}}</math> and <math>\frac{1}{\sqrt{x}+\sqrt{y}}</math> (and their combinations) where x and y are natural number and a and b are integers.</p> <p>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.)</p> <p><b>UNIT II : ALGEBRA</b>  <b>CHAPTER 2 : POLYNOMIALS (26 periods)</b>  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. 2. Factors and multiples. Zeros of a polynomial. Motivate and State the Remainder Theorem with examples. 3. Statement and proof of the Factor Theorem. Factorization of <math>ax^2 + bx + c</math>, <math>a \neq 0</math> where a, b and c are real numbers, and of cubic polynomials using the Factor Theorem. Recall of algebraic expressions and identities. Verification of identities:  <math>(x + y + z)^2 = x^2 + y^2 + z^2 + 2xy + 2yz + 2zx</math>  <math>(x \pm y)^3 = x^3 \pm y^3 \pm 3xy(x \pm y)</math>  <math>x^3 \pm y^3 = (x \pm y)(x^2 \mp xy + y^2)</math>  <math>x^3 + y^3 + z^3 - 3xyz = (x + y + z)(x^2 + y^2 + z^2 - xy - yz - zx)</math>  and their use in factorization of polynomials.</p>	<p>Activity : Square roots of natural number on number line, to construct spiral square roots  <a href="https://www.cbsetuts.com/ncert-class-9-maths-lab-manual-construct-square-root-spiral/">https://www.cbsetuts.com/ncert-class-9-maths-lab-manual-construct-square-root-spiral/</a></p> <p>Explanation of number system by venn diagram</p> <p><a href="https://diksha.gov.in/play/content/do_312579870128037888210969">https://diksha.gov.in/play/content/do_312579870128037888210969</a></p> <p>Activity: Verification of identities <math>(a+b+c)^2</math>, <math>(a+b)^3</math>  Explanation of zeroes of linear, quadratic, cubic polynomials and types of graph can be obtained</p>	<p>ORAL TEST</p> <p>SLIP TEST</p>
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3	JULY	25	<p><b>CHAPTER 3 : LINEAR EQUATION IN TWO VARIABLES (16) Periods</b>  1.Recall of linear equations in one variable.  Introduction to the equation in two variables.  2.Focus on linear equations of the type <math>ax + by + c=0</math> . 3.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.</p> <p><b>UNIT III</b>  <b>CHAPTER 4:COORDINATE GEOMETRY (7 Periods)</b></p> <p>1.The Cartesian plane,  2.coordinates of a point, names and terms associated with the coordinate plane, notations.</p>	<p><a href="https://diksha.gov.in/play/content/do_312579872668131328111376">https://diksha.gov.in/play/content/do_312579872668131328111376</a></p> <p>Activity: To draw graph of linear equation on plane</p> <p><a href="https://diksha.gov.in/play/content/do_31264308024403558414258">https://diksha.gov.in/play/content/do_31264308024403558414258</a></p> <p>Activity : To find hidden picture by plotting points  Use of coordinate geometry in regulating air traffic , in GPS etc</p>	PERIODIC TEST 1
4	AUGUST	24	<p><b>UNIT IV : GEOMETRY</b>  <b>CHAPTER 5 : INTRODUCTION TO EUCLID'S GEOMETRY (7) Periods</b></p> <p>* History - Geometry in India and Euclid's geometry.  Euclid's method of formalizing observed phenomenon into rigorous Mathematics with definitions, common/obvious notions, axioms/postulates and theorems.</p>	<p><a href="https://diksha.gov.in/play/content/do_31274765443053158413808">https://diksha.gov.in/play/content/do_31274765443053158413808</a></p> <p>Explanation of difference between Euclidean and non Euclidean geometry in the nature of parallel lines</p>	SLIP TEST

5	SEPTEMBER	21	<p>* The five postulates of Euclid. Showing the relationship between axiom and theorem, for example:  (Axiom) 1). Given two distinct points, there exists one and only one line through them. (Theorem)  2. (Prove) Two distinct lines cannot have more than one point in common.</p> <p><b>CHAPTER 6 : LINES AND ANGLES</b>  1.(Motivate) If a ray stands on a line, then the sum of the two adjacent angles so formed is <math>180^\circ</math> and the converse.  2.(Prove) If two lines intersect, vertically opposite angles are equal.</p> <p><b>LINES AND ANGLES(Contd.)</b></p> <p>3.(Motivate) Lines which are parallel to a given line are parallel.</p> <p><b>CHAPTER 7: TRIANGLES (22) Periods</b>  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).</p>	<p><a href="https://diksha.gov.in/play/content/do_312579870380105728210986">https://diksha.gov.in/play/content/do_312579870380105728210986</a></p> <p>Activity : To verify when two lines intersect then vertically opposite angles are equal</p> <p>Explanation of angles and pair of angles using real life example</p> <p><a href="https://diksha.gov.in/play/content/do_312579870514012160210995">https://diksha.gov.in/play/content/do_312579870514012160210995</a></p> <p>Activity : Congruence of triangles by making cut outs of triangles</p>	<p><a href="https://docs.google.com/forms/d/e/1FAIpQLSfrQQshuT6OqXY2Fb8nVJerppo4-Y0_D33HFRWX03mT_-vg/viewform?usp=sf_link">https://docs.google.com/forms/d/e/1FAIpQLSfrQQshuT6OqXY2Fb8nVJerppo4-Y0_D33HFRWX03mT_-vg/viewform?usp=sf_link</a></p>
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6	OCTOBER	16	<p><b>CHAPTER 8 : QUADRILATERALS (13) Periods</b></p> <p>1. (Prove) The diagonal divides a parallelogram into two congruent triangles.</p> <p>2. (Motivate) In a parallelogram opposite sides are equal, and conversely.</p> <p>3. (Motivate) In a parallelogram opposite angles are equal, and conversely.</p> <p>4. (Motivate) A quadrilateral is a parallelogram if a pair of its opposite sides is parallel and equal.</p> <p>5. (Motivate) In a parallelogram, the diagonals bisect each other and conversely.</p>	<p><a href="https://diksha.gov.in/play/content/do_31298100661175910416">https://diksha.gov.in/play/content/do_31298100661175910416</a></p> <p>Activity :Diagonal divides a parallelogram into two congruent triangles</p>	<p>PERIODIC TEST 2 / HALF YEARLY EXAMINATION</p>
7	NOVEMBER	24	<p><b>QUADRILATERALS ( Contd.)</b></p>		

		<p>6. (Motivate) In a triangle, the line segment joining the 7. mid points of any two sides is parallel to the third side and in half of it and (motivate) its converse.</p> <p><b>CHAPTER 9 : CIRCLES (17)</b></p> <p><b>Periods</b></p> <p>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.</p> <p>3. (Motivate) Equal chords of a circle (or of congruent circles) are equidistant from the center (or their respective centers) and conversely.  4. (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.</p> <p>5. (Motivate) Angles in the same segment of a circle are equal.  6. (Motivate) If a line segment joining two points subtends equal angle at two other points lying on the same side of the line containing the segment, the four points lie on a circle.  7. (Motivate) The sum of either of the pair of the</p>	<p><a href="https://diksha.gov.in/play/content/do_31331739053461504011130">https://diksha.gov.in/play/content/do_31331739053461504011130</a></p> <p>Activity : The angle subtended by an arc of a circle at its center is <b>twice the angle it subtends anywhere on the circle's circumference</b> ,Angles in the same segment , opposite angles of cyclic quadrilateral</p>	<p><a href="https://docs.google.com/forms/d/e/1FAIpQLScZELxnuso0mMh-tv9A83SeDhdWbbcWEviw2OTh25kMUkcgBA/viewform?usp=sf_link">https://docs.google.com/forms/d/e/1FAIpQLScZELxnuso0mMh-tv9A83SeDhdWbbcWEviw2OTh25kMUkcgBA/viewform?usp=sf_link</a></p>
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			opposite angles of a cyclic quadrilateral is $180^\circ$ and its converse		
8	DECEMBER	18	<p><b>UNIT V : MENSURATION</b></p> <p><b>CHAPTER 10 : HERON'S FORMULA (5 Periods)</b></p> <p>Area of a triangle using Heron's formula (without proof)</p> <p><b>CHAPTER 11 : SURFACE AREAS AND VOLUMES (17) Periods</b></p> <p>Surface areas and volumes of spheres (including hemispheres) and right circular cones.</p>	<p><a href="https://diksha.gov.in/play/content/do_312526065155661824132963">https://diksha.gov.in/play/content/do_312526065155661824132963</a></p> <p>Use of Heron's formula(for eg. Forest area ,area of the traffic sign board)</p> <p><a href="https://diksha.gov.in/play/content/do_31327850098370969611266">https://diksha.gov.in/play/content/do_31327850098370969611266</a></p>	SLIP TEST
9	JANUARY	24	<p><b>SURFACE AREAS AND VOLUMES (Contd.)</b></p> <p><b>UNIT VI : STATISTICS</b></p> <p><b>CHAPTER 12 : STATISTICS (15) Periods</b></p> <ul style="list-style-type: none"> <li>Bar graphs, histograms (with varying base lengths), and frequency polygons.</li> </ul>	<p>Activity : To draw histogram of heights of students of your class</p> <p>PROJECT: To draw bar graph of household expenditure of your family of a month / yearly</p>	<p><a href="https://docs.google.com/forms/d/e/1FAIpQLScL87NsEXd7DGK0UtzUjbKRe5RV4e5glwEhZs7CeT075v_OZQ/viewform?usp=sf_link">https://docs.google.com/forms/d/e/1FAIpQLScL87NsEXd7DGK0UtzUjbKRe5RV4e5glwEhZs7CeT075v_OZQ/viewform?usp=sf_link</a></p> <p>PERIODIC TEST 3</p>

10	FEBRUAR Y	23	REVISION FOR THE SESSION ENDING EXAMINATION		CLASS TEST
11	MARCH	24	SESSION ENDING EXAMINATION		

Question Bank: Class IX Mathematics	<a href="https://cbseacademic.nic.in/cbe/documents/Item-Bank---Maths---Class-9.pdf">https://cbseacademic.nic.in/cbe/documents/Item-Bank---Maths---Class-9.pdf</a>
Curriculum Aligned Competency Based Test Items : Class IX Mathematics	<a href="https://cbseacademic.nic.in/cbe/documents/SAS_Maths-Class-9.pdf">https://cbseacademic.nic.in/cbe/documents/SAS_Maths-Class-9.pdf</a>
CBSE Handbooks: Practice Book Maths 9	<a href="https://cbseacademic.nic.in/web_material/Manuals/PracticeBook_Maths9.pdf">https://cbseacademic.nic.in/web_material/Manuals/PracticeBook_Maths9.pdf</a>
CBSE Teacher Manuals: Class IX:Maths	<a href="https://cbseacademic.nic.in/web_material/term/9Math.pdf">https://cbseacademic.nic.in/web_material/term/9Math.pdf</a>

## MATHEMATICS QUESTION PAPER DESIGN

CLASS – IX (2024-25)

Time: 3 Hrs.

Max. Marks: 80

S. No.	Typology of Questions	Total Marks	% Weightage (approx.)
1	<b>Remembering:</b> Exhibit memory of previously learned material by recalling facts, terms, basic concepts, and answers. <b>Understanding:</b> Demonstrate understanding of facts and ideas by organizing, comparing, translating, interpreting, giving descriptions, and stating main ideas	43	54
2	<b>Applying:</b> Solve problems to new situations by applying acquired knowledge, facts, techniques and rules in a different way.	19	24

3	<p><b>Analysing :</b> Examine and break information into parts by identifying motives or causes. Make inferences and find evidence to support generalizations</p>	1 8	22
	<p><b>Evaluating:</b> Present and defend opinions by making judgments about information, validity of ideas, or quality of work based on a set of criteria.</p> <p><b>Creating:</b> Compile information together in a different way by combining elements in a new pattern or proposing alternative solutions</p>		
<b>Total</b>		8 0	100

<b>INTERNAL ASSESSMENT</b>	<b>20 MARKS</b>
Pen Paper Test and Multiple Assessment (5+5)	10 Marks
Portfolio	05 Marks
Lab Practical (Lab activities to be done from the prescribed books)	05 Marks