



LORD MAHAVIRA SCHOOL

Sector-29, Noida, 201303

Website: www.lordmahaviraschool.co.in / Email: lord.mahavira@yahoo.in

LESSON PLAN

CLASS: XI

SUBJECT-MATHEMATICS (STANDARD) (041)

REFERENCE BOOK –R.D. SHARMA (SAMPLE PAPER OF ARIHANT PUBLICATION)

S.N.	MONTH	TOPIC	SUBTOPIC	ACTIVIT/PROJECT
1	JULY	CH.1-SETS	<p>Sets and their representation , Empty sets ,finite and infinite</p> <p>Sets ,Equal sets ,subsets, subsets Of a set of real numbers espec lally intervals (with notations), Universal sets ,vein diagrams , Union and intersection of sets Difference of sets, complement Properties of complement .</p>	<p>Activity-1: To Find the</p> <p>Number of</p> <p>Subsets of a</p> <p>Given set</p>
		CH.2-RELATION AND FUNCTION	<p>Ch.2 - Relation and function . Ordered pairs, Cartesian product Of sets ,Number of elements in The Cartesian product of two Finite sets ,Definition of Relation, Domain,Co-Domain and Range of Relation ,Function as a special Type of Relation,Domain,co-domain</p>	

			And Range of a function .Type of function with their respective graph .	
		TRIGONOMETRIC FUNCTION	Positive and Negative angles ,Measuring angles in radians and degrees And conversion from one measure To another ,Definition of trigonometric function with the help of unit circle .Truth of identity .Signs of trigonometric Functions ,Domain and Range of trigonometric Function and their graphs .Expressing $\sin(x \mp y)$ And $\cos(x \mp y)$ in terms of $\sin x, \cos x, \sin y, \cos y$ And their simple applications.	Activity-2-To verify that for two sets A and B $n(A \times B) = pq$ and the total number of relations from A to B is 2^{pq} ,where $n(A) = p$ and $n(B) = q$.
		COMPLEX NUMBER AND QUADRATIC EQUATION	Need for complex number ,especially $\sqrt{-1}$,to be motivated by inability to solve some of the Quadratic equation ,algebraic properties of complex number ,Argand plane .	Activity-3- To verify the relation between degree measure and the radian measure of an angle .
2	AUGUST	LINEAR INEQUALITY & PERMUTATION COMBINATION	Algebraic solution of linear inequalities in one variable and their representation on the number line . Fundamental principal of counting ,factorial $n (n!)$ Permutation and combination,derivation of formulae for n_{P_r} and n_{C_r} and their connection ,simple application	ACTIVITY-4- To find the value of Sine and Cosine function in 2 nd ,3 rd and 4 th Quadrant using their value in first quadrant .
		BINOMIAL THEOREM	Historical perspective ,Statement and proof of binomial theorem for positive Integral indices , Pascal's triangle ,Simple applications	Activity-5 An alternative approach to obtain formulae for the sum of squares of first

		SEQUENCE & SERIES	Sequence & series ,Arithmetic Mean (A.M.) ,Geometric Progression ,G.M. General term of a G.P.Sum of n terms of a G.P.Infinite G.P., Sum of infinite terms of a g.p. Relation between A.M.& G.M.	N natural numbers .
		COORDINATE GEOMETRY	Brief recall of two –dimensional geometry ,slope of a line and angle between two lines ,Various forms of equation of lines ,Distance of a point from a line .l	Activity-6 To verify that Equation of line passing through The point of intersection of two lines $a_1x+b_1y+c_1=0$ And $a_2x+b_2y+c_2=0$ Is $a_1x+b_1y+c_1+ \lambda(a_2x +b_2y+c_2) =0$
3	SEPTEMBER		REVISION AND TERM 1 EXAM	
4	OCTOBER	CONIC -SECTION	Section of a cone ,circles, ellipse, parabola ,a point, a straight line and a pair of intersecting lines as a degenerated case of a conic Section , Standard equations And simple properties of parabola, ellipse and Hyperbola ,Dstandard equation of a circle .	Activity -7 To construct a Pascal’s triangle And to write binomial expansion for a given positive integral index .
5	NOVEMBER	INTRODUCTION TO THREE D –GEOMETRY	CO-ordinate `axis and co-ordinate planes in three-D geometry .co-ordinate of a point . Distance between two points .	Activity-8 To demonstrate that the arithmetic Mean between Two positive number is always greater then the geometric mean

6	DECEMBER	LIMIT AND DERIVATIVE	<p>Derivative introduced as rate of change both as that of distance function and geometrically . Intuitive idea of limit limits of polynomials</p> <p>And rational functions ,trigonometric ,exponential and logarithmic functions , Definition of derivative relate it to slope of tangent</p> <p>Of the curve ,Derivative of sum , difference ,product and Quotient of functions ,Derivative of polynomial and Trigonometric function.</p>	<p>Activity-9</p> <p>To find analytically</p> $\lim_{x \rightarrow c} f(x) = \frac{x^2 - c^2}{x - c}$
7	JANUARY	STATISTICS & PROBABILITY	<p>Measure of Dispersion, Range, Mean Deviation, variance & standard Deviation of ungrouped /Grouped data.</p> <p>Probability –Events, occurrence of events , 'not' , 'and' , 'or' events ,exhaustive events , mutually exclusive events, Axiomatic (set theoretic) probability.</p> <p>Probability of an event , probability of 'not' , 'and' & 'or' events.</p>	<p>Activity-10</p> <p>To write the sample space ,when coin is tossed once, twice ,thrice or four times</p>
8	FEBRUARY		REVISION OF ALL LESSONS TAUGHT .	
9	MARCH		TERM 2 EXAM	



LORD MAHAVIRA SCHOOL

Sector-29, Noida, 201303

Website: www.lordmahaviraschool.co.in/ Email: lord.mahavira@yahoo.in

LESSON PLAN

CLASS-XII

SUBJECT – MATHEMATICS (STANDARD) 041

(BOOK: NCERT/REFERENCE BOOK –ARIHANT PUBLICATION)

S.N.	MONTH	TOPIC	SUB-TOPIC	ACTIVITY
1	APRIL	Relation & Function Inverse Trigonometric function	Type of Relation ,reflexive ,symmetric and transitive relation ,equivalence relation ,One to one and onto function Definition ,Domain ,Range ,Codomain Principal value Branch ,graph of Inverse trigonometric function .	Activity(1) – To verify the relation R in the Set L of all lines in a plane ,defined by $R = \{(l,m) : l \text{ is perpendicular to } m\}$ is symmetric but neither reflexive nor transitive .
2	MAY	Matrices and Determinant	Concept,Notation ,order ,equality ,type of matrices Symmetric and skew –symmetric matrix ,operation on matrices ,simple properties Of addition ,multiplication and scalar multiplication ,Non –commutativity multiplication of matrices , and existence of non –zero matrices whose product is the zero matrix (restrict to square matrix of order 2),Invertible matrices and proof of uniqueness of inverse ,if it exist . Determinant of a square matrix (upto 3x3 matrix) Minors ,cofactors and application of determinants in finding the area of a triangle ,Adjoint and inverse of a square matrix ,consistency ,In-consistency and number of solution of system of linear equation by	Activity(2) – To verify the relation R in the set L of all lines In a plane , defined by $R = \{(l,m) : l \text{ is parallel to } m\}$ is an equivalence relation . Activity(3) To Demonstrate a function which is Not one-one but onto.

			examples , Solving System of linear Equation by examples Solving system of linear Equations in two or three variables .	
3	JUNE		SUMMER -VACATION	
4	JULY	Continuity and Differentiability	Continuity and Differentiability ,chain rule, Derivative of Inverse trigonometric function ,Derivative of implicit function ,Concept of exponential and logarithmic function ,Derivative of exponential and logarithmic function ,Derivative of function expressed in parametric form ,Second order Derivative .	Activity (4)- To Demonstrate A function ,which is one-one but not onto .
5	AUGUST	Application of Derivative	Rate of change of quantity ,Increasing /Decreasing function ,Maxima and Minima (first D erivative test motivated geometrically and second order derivative test given as a provable tool) Simple problems (that illustrate basic principles and understanding of the subject as well as real life Solution)	Activity (5) To draw the graph of $\sin^{-1} x$,using The graph of Sinx And Demonstrate The concept of mirror reflection (about the line y=x)
		Integrals	Integration as inverse process of Differentiation ,Integration of a variety of function by substitution ,by partial fractions,by parts Evaluation of simple integrals of the following types and problems based on them , $\int \frac{dx}{x^2-a^2}, \int \frac{dx}{a^2-x^2}$ $\int \frac{dx}{x^2+a^2}, \int \frac{dx}{\sqrt{a^2-x^2}}$ $\int \frac{dx}{\sqrt{x^2-a^2}}, \int \frac{dx}{\sqrt{x^2+x^2}}$ $\int \frac{dx}{ax^2 + bx + c}$ $\int \frac{dx}{\sqrt{ax^2+bx+c}},$	Activity (6) To explore the principal value Of $\sin^{-1}x$ using a Unit circle. Activity(7) To sketch the graph Of a^x and $\log_a x$, $a>0, a \neq 1$ and to examine that they are mirror image of each other .

			$\int \frac{px+q}{ax^2+bx+c} dx,$ $\int \frac{px+q}{\sqrt{ax^2+bx+c}} dx,$ $\int \sqrt{x^2 - a^2} dx,$ $\int \sqrt{x^2 + a^2} dx,$ $\int \sqrt{ax^2 + bx + c} dx$ <p>Fundamental theorem of calculus (without proof) Basic properties of definite integrals and evaluation of Definite integral.</p>	
6	SEPTEMBER		REVISION AND TERM 1 EXAM	
8	OCTOBER	Application of integrals & Differential equation	<p>Application in finding the area in simple curve ,especially lines/circles/parabolas / ellipses (in standard form only .</p> <p>Definition ,order and degree ,General and Particular solution of a differential equation.Solution of A differential equation by method of separation of variables .Solution of Homogeneous differential equation of the first order and first degree , Solution of linear differential equation Of the type of</p> $\frac{dy}{dx} + py = q$ <p>Where p and q are either function of x or constant . And $\frac{dx}{dy} + Rx = S$ Where R and S are Either function of y or constant.</p>	<p>Activity(8) To establish the Relationship between common logarithm and natural logarithm Of the number x</p>
9	NOVEMBER	Vectors &	Vectors and scalars ,magnitude and direction of	Activity(9)

		3-D geometry	<p>a vector ,Direction ratios and Direction Cosines of a vector , Type of vectors (equal , unit ,zero ,parallel and collinear vectors) Position vector of a Point ,negative of a vector , components of A vector ,addition of Vectors , multiplication of a vector by a scalar , Position vector of a point dividing a line segment in a given ratio ,Definition ,Geometrical interpretation , Properties and application of scalar (dot) product of vectors , Vector (cross) product of vectors .</p> <p>Three -D-Geometry Direction Cosines and direction ratios of a line segment joining two points ,Cartesian and vector Equation of a line ,Dkew lines ,Shortest distance between two lines ,angle between two lines .</p>	To find analytically the limit of a function $f(x)$ at $x=c$ and check the continuity of the function at that point .
10	DECEMBER	Linear Programmine	<p>Introduction, related terminology such as Constraints, objective Function, optimization, graphical method of Solution for problems in two variables. Feasible region and infeasible regions (bounded or unbounded) Feasible And infeasible solutions. Optimal feasible solutions (up to three non-trival constraints)</p>	<p>Activity(10) To verify that for A function f to be continuous at given point x_0 , $\nabla y = f(x_0 + \nabla x) - f(x_0)$ Is arbitrary small Provided ∇_x is sufficiently small .</p>
		Probability	<p>Conditional probability, multiplication theorem on probability, independent events, Total probability ,Bayes' theorem ,Random variable and its probability Distribution ,Mean of Random variable .</p>	
11	JANUARY		REVISION AND PRE BOARD	
12	FEBRUARY		REVISION, PRACTICALS ETC	