

Class - X

Mathematics

Time (Period)	Topic\Theme	Subject Matter	Activities\TLM
Unit - I			
Number System			
12	1. Real Number	Euclid's division algorithm, Fundamental theorem of Arithmetic- statements after reviewing work done earlier and after illustrating and motivating through examples. Proofs of results- irrationality of $\sqrt{2}$, $\sqrt{3}$, $\sqrt{5}$. Representing terminating and non-terminating recurring decimals as rational numbers.	
Unit - II			
Algebra			
15	1. Pairs of linear equations in two variables.	Pair of linear equations in two variables. Geometrical representation of different possibilities of solutions\in-consistencies. Algebraic conditions for number of solutions.	Graphically discuss the solutions of linear equations in two variables.

		Solutions of pair of linear equations in two variables algebraically- by substitution, by elimination and by cross multiplication. Simple situational problems reducible to linear form must be included.	
15	2. Quadratic Equations.	Standard form of quadratic equation $ax^2+bx+c=0$ ($a \neq 0$), $a,b,c \in \mathbb{R}$. Solution of quadratic equation (only real roots) by factorization, completing the squares and by using quadratic formula. Nature of roots. Relationship between roots and coefficient quadratic equation ($\alpha+\beta = -b/a$, $\alpha.\beta=c/a$). Formation of quadratic equation given the roots of quadratic equation. Problems related to day to day activities based on quadratic eqns.	
8	3. Polynomials	Recall of the defn. of a polynomial and its related concepts, H.C.F.	

		and LCM of polynomials. Statement and simple problems on division algorithm for polynomials with real coefficients. H.C.F. of polynomials using long division method, questions on L.C.M. making use of H.C.F.	
6	4. Arithmetic Progression	Motivation for studying A.P., Derivation of standard results of finding the n^{th} term and sum of first n -terms.	$1 = 1 = \frac{1(1+1)}{2}$ $1+2 = 3 = \frac{2(2+1)}{2}$ $1+2+3 = 6 = \frac{3(3+1)}{2}$ ----- ----- $1+2+3+...+n = \frac{n(n+1)}{2}$
Unit-III			
Trigonometry			
12	1. Trigonometric Ratios	Measurement of angles in different systems (i.e. sexadecimal, centesimal and circular systems). Relationship between these systems. Trigonometric ratios of an acute angle of a right angled triangle. Proof of their existence (well defined) motivates the	

		ratios, whichever are defined at 0° and 90° . Values (with proof) of the trigonometric ratios of $30^\circ, 45^\circ$ and 60° . Relationship between the ratios.	
6	2. Trigonometric Identities	Proof and application of identity $\sin^2 A + \cos^2 A = 1$. Only simple identities to be given. Trigonometric ratios of complementary angles.	
6	3. Heights and Distances	Simple and believable problems on heights & distances. Problems should not involve more than two right triangles. Angles of elevation\depression should be only $30^\circ, 45^\circ, 60^\circ$.	To determine the lengths of shadows of different objects and their heights manually as well as using formula.
Unit – IV			
Coordinate Geometry – Two Dimensional			
13	1. Lines	Review of concepts of coordinate geometry done earlier including graphs of linear equations. Distance between two points and section formula (internal). Area of triangle.	

Unit-V			
Geometry			
15	1. Triangles	<p>Definitions, examples, counter examples of similar triangles.</p> <ol style="list-style-type: none"> 1. (Prove) If a line is drawn parallel to one side of a triangle to intersect the other two sides in distinct points, the other two sides are divided in the same ratio. 2. (Motivate). If a line divides two sides of a triangle in the same ratio the line is parallel to the third side. 3. (Motivate). If in two triangles, the corresponding angle are equal their corresponding sides are proportional and the triangles are similar. 4. (Motivate) If the corresponding sides of two triangles are proportional, their corresponding 	<p>Geometry itself is an activity based portion. Therefore it does not need any separate activities.</p>

		<p>angles are equal and the two triangles are similar.</p> <p>5. (Motivate). If one angle of a triangle is equal to one angle of another triangle and the sides including these angles are proportional the two triangles are similar.</p> <p>6. (Motivate) If a perpendicular is drawn from the vertex of the right angle of a right triangle to the hypotenuse, the triangles on each side of the perpendicular are similar to the whole triangle and to each other.</p> <p>7. (Prove). The ratio of the areas of two similar triangles is equal to the ratio of the squares on their corresponding sides.</p> <p>8. (Prove). In a right triangle, the square of the hypotenuse is</p>	
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		<p>equal to the sum of the squares of the other two sides.(Pythagorouus theorem).</p> <p>9. (Prove). In a triangle, if the square of one side is equal to sum of the squares of the other two sides, the angle opposite to the first side is a right triangle.</p>	
8	2. Circles	<p>Tangents to a circle motivated by taking a chord and bringing one point closer and closer to another along the curve.</p> <p>1.(Prove). The tangent at any point of a circle is perpendicular to the radius through the points of contact.</p> <p>2. (Prove) The lengths of tangents drawn from an external point to circle are equal.</p>	
8	3. Constructions	<p>1. Division of a line segment in a given ratio (internally)</p> <p>2. Tangent to a circle</p>	

		<p>from a point outside it.</p> <p>3. Construction of a triangle similar to a given triangle.</p>	
<p>Unit-VI</p> <p>Mensuration</p>			
12	1. Areas of plane Figures	<p>Recall the concept of a circle, area and circumference of a circle. Area of sectors and segments of a circle. Problem based on area and perimeter\circumference of the above said plane figures. (In calculating area of segment of a circle, problem should be restricted to central angle of 60°, 90° and 120° only.) Plane figures involving triangles, simple quadrilaterals and circles should be taken.</p>	
12	2. Surface Area and Volumes	<p>1. Problems on finding surface area and volumes of combinations of any two of the following cubes, cuboids, spheres,</p>	

		<p>hemispheres and right circular cylinder\cones.</p> <p>2. Frustrum of a cone</p> <p>Problems involving converting one type of metallic solid into another and other mixed problems.</p> <p>(Problems with combination of not more than two different solids to taken)</p>	
<p>Unit-VII</p> <p>Statistics and Probability</p>			
13	1. Statistics	<p>Mean, median and mode of grouped data (bimodal situation to be avoided).</p> <p>Cumulative frequency graph.</p>	
10	2. Probability	<p>Recall the concepts introduced in IX class and strengthening the concept with more examples</p> <p>Classical definition of probability.</p> <p>Simple problems on single events, not using</p>	

		set notation.	
Unit-VIII			
Banking			
9	Banking	Introduction of banking system. Types of bank. Types of bank accounts. Calculation of interest on saving accounts, Fixed deposit account etc.	Teacher will show deposit, withdrawal and other forms of different banks and post office and ask the students to fill them. He will also show saving bank pass book. Forms of demand draft and how to fit it.