CHOITHRAM SCHOOL, MANIK BAGH, INDORE
ANNUAL CURRICULUM PLAN SESSION 2017 – 2018

CLASS: X
SUBJECT: MATHEMATICS

Month & Working Days	Theme/ Sub-theme	Learning Objectives		Activities &Resources	Expected Learning Outcomes	Assessment
		Subject Specific(Content Based)	Behavioral (Application based)			
JUNE 15 Days	Polynomials	Students will be able 1. To understand the geometrical meaning of zeroes and to tell the possible number of zeroes for a given polynomial. 2. To find zeroes of a linear, quadratic and cubic polynomial algebraically. 3. To find the polynomial when zeroes are known. 4. To divide a polynomial by other polynomial and express the division using division algorithm.	Students will be able to calculate the maximum and minimum values of a curve.	Plotting of polynomial and showing its intersection with axes (if any).	Students learnt about 1. types of polynomials 2. geometrical meaning of zeros of a polynomial 3. graphs of polynomials 4. relation between zeros & its coefficients 5. division of polynomial by another polynomial	Assessment will be done on the basis of decided Rubrics.
	Pair of Linear equations in two variables	Students Student will be able to 1.understand the concept of pair of linear equations (simultaneous eqn.) 2. form equations and solve them graphically and algebraically. 3. Plot the lines representing the linear equations of given system on same plane.	If two unknown quantities are to be evaluated then we necessarily need to have two criteria related to them, knowing those cases they can formulate the pair of equations in two variables and solve them.	To obtain the conditions for consistency or inconsistency of given pairs of linear equations in two variables by graphical method	Students have learnt the solvability and the application of pair of linear equations (simultaneous eqn.) graphically and algebraically.	Assessment will be done on the basis of decided Rubrics.
JULY 24 Days	Real Numbers	Students will be able 1. To understand Euclid's Division lemma. 2. To understand the difference between Euclid's Division Lemma	Students will be able to 1. calculate the maximum number of items of given dimensions that can be placed in given space	Verification of Euclid's Division Lemma by using Paper strip of 14 cm, then folding it	Students learned about the 1. meaning and application of divisibility 2. Euclid's division lemma 3. HCF & LCM using Euclid's division	Assessment will be done on the basis of decided

		and Algorithm. **3. To be able to find out HCF of two given numbers using Euclid's Algorithm.** **4. To be able to understand Fundamental Theorem of Arithmetic.** **5. To be able to find HCF and LCM using prime factorization.** **6. To be able to segregate rational numbers from irrational numbers on the basis of their decimal expansions.**	**2.calculate the minimum distance that can be covered in complete steps by different people.** **3. decide max columns for march past.** **4. calculate the minimum time to meet at the starting point.**	**after 2cm, 3 cm, 4 cm,... etc. and observing the valuesof remainder.**	**lemma** **4. Euclid's division algorithm** **5. fundamental theorem of arithmetic,** **6. Remainder theorem and factor theorem** **7. Irrational numbers and its decimal expansion.**	**Rubrics.**
	Quadratic Equations	**Students will be able to** **1. Give the Standard form of a Quadratic Equation** **2. Check if a given equation is a quadratic equation** **3. Represent a given situation in the form of quadratic equation** **4. Find the roots of a quadratic equation by factorization** **5. Find the roots of a quadratic equation by the method of completing the square** **6. Derive the quadratic formula** **7. Find the roots or the solution of a quadratic equation using the quadratic formula** **8. Find the nature of the roots of a quadratic equation** **9. Find the sum and the product of the roots of a quadratic equation** **10. Represent a word problem as a quadratic equation and solve the problem**	**1. Practice of topics of quadratic equation helps students to think logically, which further help students to take their decisions firmly** **2. Student can calculate average speed of a moving object (cycle, motorboat) without speedometer** **3. Quadratic equations are often the first problems student encounter that has *multiple solutions* (or none). Do not *'give up'* in real life problems because all problems have more than one solution** **4. The typical method of solving quadratics, completing the square, is the first truly powerful example of *changing your point of***	**NIL**	**Students have learnt:** **1. To recognize a quadratic equation as equation of the form $ax^2 + bx + c = 0$, where a, b, c are real numbers and $a \neq 0$** **2. To understand that roots of a quadratic equation are those real numbers which satisfy the quadratic equation. Roots are also known as solution of quadratic equation.** **3. To find the roots of equation by factorisation method.** **4. To predict the nature of roots based on the sign of discriminant.** **5. To find the roots of equation by discriminant (formula) method.** **6. To know the relation between sum and product of the roots of quadratic equation and the coefficients of x^2, x and constant** **7. To form a quadratic equation if sum of roots and product of roots**	**Assessment will be done on the basis of decided Rubrics.**

			reference **to clarify a complicated situation.**		**are known.** **8. To solve the problems from real life situations having application of quadratic equations.**	
	Arithmetic Progressions	**Students will be able to** **1.Identify if a given series of numbers form an arithmetic progression or AP** **2. Identify the first term and the common difference of a given AP** **3. Find the nth term of an AP** **4. Understand that the general term of an A.P. is always a linear expression.** **5. Write the specified term of an A.P. when a, n and d are known** **6. Derive the formula for the sum of the first n terms of an AP** **7. Find the sum of the first n terms of an AP** **Find the sum of first n positive integers**	**Student will be able to** **1. understand the pattern** **2. compare premium plans** **3. calculate the amount he'll receive on a particular sum after *n* number of years**	**To introduce AP with the help of natural numbers.** **To verify that the given sequence is an arithmetic progression by paper cutting and pasting method**	**Students have learnt to** **1. Appreciate the patterns in numbers** **2. Cite examples for arithmetic progression** **3. Recognize an AP from given sequences.** **4. Observe number patterns and guess the next term** **5. Identify the first term of an AP** **6. Identify common difference of an AP** **7. Find the nth term of an AP** **8. Find the sum of the first n terms of an AP** **9. Find the sum of the first n positive integers.** **10. Determine the n^{th} term of an AP** **11. Explore that the n^{th} term of an AP is a linear expression and common difference of an AP is free from n.** **12. Apply the knowledge of AP in problem solving.** **13. Represent situations from daily life by using progressions.**	**Assessment will be done on the basis of decided Rubrics.**
PAT-I (31 July)						
AUGUST 18 Days	**Statistics**	**Students will be able to** **1. List three methods used to calculate the mean of the grouped data.**	**Teacher may give some scenarios to the students for the application of mean, median and mode.**	**Finding mean,mode and median of heights and weights of student of the**	**1 List three methods used to calculate the mean of the grouped data.** **2. Calculate the mean of the grouped**	**Assessment will be done on the basis of**

		2. Calculate the mean of the grouped data using direct method, assumed mean method and step deviation method. **3. Calculate the mode of grouped data.** **4. Find the median of ungrouped data with odd number of observation.** **5. Find the median of ungrouped data with even number of observation.** **6. Find the median of grouped data.** **7. Represent cumulative frequency distribution as an OGIVE.**	**Through such practice students will develop the analysis and reasoning skill, this in turn develops their application skill.**	**class**	**data using direct method, assumed mean method and step deviation method.** **3. Calculate the mode of grouped data.** **4. Find the median of ungrouped data with odd number of observation.** **5. Find the median of ungrouped data with even number of observation.** **6. Find the median of grouped data.** **7. Represent cumulative frequency distribution as an OGIVE.** **8. Develop their reasoning, analysis and data collection skill.**	**decided Rubrics.**
	Probability	**Students will be able to** **1. Calculate the probability of an event** **2. Describe the terms equally likely outcomes, elementary event, complement of an event, sure event and impossible event.**	**1. Probability is used in various occupations such as healthcare insurance, Insurance companies uses this to decide on financial policies** **2. It is widely used in the study of Mathematics, Statistics, Gambling, Physical sciences, Biological sciences, advertising, farming and weather forecasting.** **3. Role of probability in cricket match.For example, the toss of a coin between the captains to decide which team would bat/ball first.** **By observing the application**	**Explanation of probability by using pack of cards**	**1. Calculate the probability of an event** **2. Describe the terms equally likely outcomes, elementary event, complement of an event, sure event and impossible event.** **3. Develop their reasoning and analytical skill.**	**Assessment will be done on the basis of decided Rubrics.**

			of probability in day to day life in various ways, students will develop their reasoning and analytical skill.			
SEPTEMBER 21 Days	**Similar Triangles**	**Students will be able to** **1. Understand Concept and Criteria for Similarity of plane figures and Triangles.** **2. Understand and prove the Basic Proportionality Theorem and its converse, Area theorem & Pythagoras theorem and its converse.** **3. Apply the above-mentioned theorems in solving problems.**	**Students will attain following behavioral objectives** **1. Visualizing** **2. Reasoning** **3. Decision making** **4. Appreciate different approaches of solving problem**	**1. To verify the Basic Proportionality Theorem using triangle cutouts.** **2.To verify area theorem** **3. To verify Pythagoras Theorem by the method of paper folding, cutting and pasting.**	**Students have learnt** **1. Criteria of Similarity and Basic Proportionality theorem.** **2.Pythagoras theorem and its converse** **3. Area & Angle bisector Theorem** **4. Reasoning, Visualizing & Decision making(Activity)** **5. Appreciate different approaches of solving problem**	**Assessment will be done on the basis of decided Rubrics.**
Half Yearly –oct3-oct 13						
OCTOBER 05 Days	**Coordinate Geometry**	**Students will be able to** **1. To derive and apply the Distance formula and section formula.** **2. To apply the formula to find the area of triangles where co-ordinates of the vertices are given.**	**Students will attain following behavioral objectives,** **1. Rational thinking** **2. Logical Thinking** **3. Appreciatedifferentapproach for plane geometry**	**NIL**	**Students have learnt** **1. concept of Cartesian geometry** **2. distance between two points,** **3.section formula** **4. area of triangle.** **5. Appreciatedifferentapproach for plane geometry**	**Assessment will be done on the basis of decided Rubrics.**
NOVEMBER 23 Days	**Introduction to Trigonometry**	**Students will be able to** **1. Understand the concept of trigonometry** **2.Understand and apply Trigonometric ratios of some specific angles** **3.Trigonometric ratios of**	**Students will attain** **1.application of trigonometric ratios in a right triangle.** **2.use of trigonometric identities to prove other trigonometric identities**	**NIL**	**Students have learnt** **1. use oftrigonometric ratios in a right triangle.** **2.use of trigonometric identities to prove other trigonometric identities**	**Assessment will be done on the basis of decided Rubrics.**

		complementary angles and trigonometric identities				
	Height and Distance	**Students will be able to** **1Understand concept of angle of elevation and depression.** **2. Apply T-ratios to find the heights of different structures.**	**After performing the Clinometer Activity / solving the real-life situation questions students will develop team Spirit, estimation of heights and distances of the objects And analysis.**	**To find height of lunch hall and water tank using Clinometer.**	**Students would be able to learn / define / apply** **1. Line of sight** **2. Angle of elevation** **3. Angle of depression** **4. To analyzeand visualize the given situation** **5. To draw the appropriate diagram** **6. To apply T – Ratios from the diagram** **7. To use the value(s) of T – Ratios of required angle(s)** **8. To calculate the heights/distances of the given objects**	**Assessment will be done on the basis of decided Rubrics.**
	Circles	**Students will be able to** **1. Define a tangent and recognize that a tangent is perpendicular to the radius of the circle at the point of tangency.** **2. Explain there is only one tangent at a point of the circle.** **3. Define the point of contact of tangent** **4. Understand that two tangent segments to a circle from a common point outside the circle are congruent.** **5. Prove that the tangent segments from an external common point are equal.** **6. Prove that the line joining the external points to the centre of the**	**After getting the concept of tangents student will think critically the application of these properties in their day to day life like** **1. In determining the best position a soccer player should be when parallel to the sidelines, to score a goal.** **2. Working of wheels on tyres.** **3. To give matrix 360^0 effect i.e. it is an illusion in the movie matrix by using the properties of circle.** **4. In building infrastructure roads sidewalls pipe runs it is very important to know**	**To verify that the lengths of tangents drawn from an external point to a circle are equal, using the method of paper folding, cutting and pasting**	**Students would be able to,** **1. Define a tangent and recognize that a tangent is perpendicular to the radius of the circle at the point of tangency.** **Explain there is only one tangent at a point of the circle.** **2. Define the point of contact of tangent** **Understand that two segments tangent to a circle from a common point outside the circle are congruent.** **3. Prove that the tangent segments from an external common point are equal.** **4. Prove that the line joining the external points to the centre of the**	**Assessment will be done on the basis of decided Rubrics.**

		circle bisect the angle between the tangents. **7. Explore properties of tangent lines and how they differ from secant lines.** **8. Conceptualize that tangent to a circle is a special case of the secant, when the two end points of its corresponding chord coincides.**	**where a point of tangent begins and the curve ends.** **5. Tangent to a curve are used for finding instantaneous velocity in physics.**		**circle bisect the angle between the tangents.** **5. Explore properties of tangent lines and how they differ from secant lines.** **6. After getting the concept of tangents student would think critically the application of these properties in their day to day life.**	
DECEMBER 18 Days	**Construction**	**Students will be able to** **1. Divide a line in the given ratio.** **2. Construct similar triangle with respect to the given ratio.** **3. Construct a tangent to a point on the circle.** **4. Construct tangents to a circle from external point at a given distance.**	**Student will be able to** **1. learn the systematic approach.** **2. develop their creativity as well as imagination skills** **3. learn to do work with accuracy and precision.** **4. acquire the skill of drawing fig.**	**Construction of similar triangles & tangents to a circle**	**Students would be able to,** **1. Divide a line in the given ratio.** **2. Construct similar triangle with respect to the given ratio.** **3. Construct a tangent to a point on the circle.** **4. Construct tangents to a circle from external point at a given distance.**	**Assessment will be done on the basis of decided Rubrics.**
	Area related to circles	**Students will be able to** **1. Find the perimeter and area of a circle.** **2. Calculate the area of a sector.** **3. Determine the area of a segment.** **4. Find the length of an arc of a sector.** **5. Find the areas of combination of plane figures.**	**By observing the application of the formula for the area of sector, area of segment and length of arc in day to day life** **This in turn will develop the calculation, reasoning and analytical skill of the learner.**	**NIL**	**Students would be able to,** **1.Find the perimeter and area of a circle.** **2. Calculate the area of a sector/ segment** **3. Find the length of an arc of a sector.** **4. Find the areas of combination of plane figures** **5. Develop their calculation, reasoning and analytical skill by practicing the application of the formula**	**Assessment will be done on the basis of decided Rubrics.**
	REVISION					
PAT - III(all chapters completed till December)						
JANUAR	**Surface**	**Students will be able to,**	**1. The student uses concrete**	**To find SA and**	**After completing the lesson,**	**Assessment**

Y **20 Days**	**Areas and volumes**	**1. Conceptualize volume as a measure of filling an object where as surface area as a measure of wrapping an object.** **2. Identify situations where there is a need of finding surface area and where there is a need of finding volume of a solid figure** **3. Find the surface areas and volumes of cuboids, cubes, cylinders, cones spheres and hemispheres, using their respective formulae.** **4. Find the surface area and volume of the combination of solids.** **5. Define and calculate the surface area and volume of the frustum of a cone.** **6. Solve some problems related to daily life situations involving surface areas and volumes of above solid figures.** **7. Apply the proper units as per requirement of the question.** **8. To covert one unit into other.**	**models to derive formula for finding perimeter, area, surface area and volume of 2-D and 3-D shapes.** **2. In engineering volume and area are very important without volume we can't figure out density or capacitance.** **3. Student prevents themselves from being cheated like if they were able to calculate paint required length of carpet to cover the floor pre-hand.** **4. In daily life volume could help us with** **5. Travel, knowing how much our container can hold could help you use your space most efficiently** **6. Water conservation** **7. Fueling up**	**volumes of a given model**	**learners should be able to** **1. Calculate the surface areas and the volumes of the combination of solids.** **2. Explain that when a solid is converted to another solid or multiple solids, either of the same or different shapes, the surface area changes but the volume remains constant.** **3. Calculate the surface area and the volume of the frustum of a cone.** **4. Word problem based on the frustum of cone or combination of solids.** **5. Put proper units with calculated answer.** **6. Apply the proper unit conversion.** **7. Apply the knowledge of the surface area and volume of 2-D, 3-D figure and their combination in day to day problems.**	**will be done on the basis of decided Rubrics.**
FEBRUARY **10 Days**	**Revision**					
Final Exam (As per CBSE Date Sheet)						