

ANNUAL CURRICULUM PLAN 2020 - 21

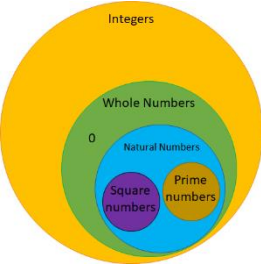
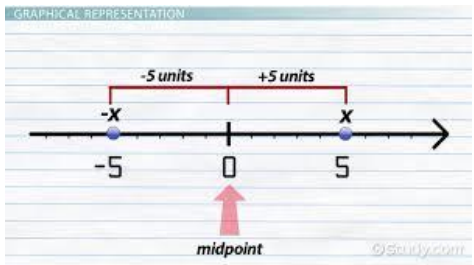
SUBJECT -- MATHEMATICS

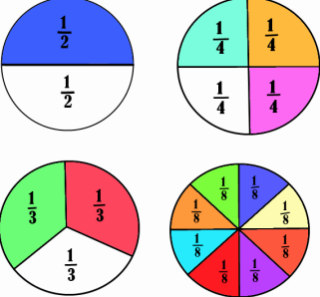
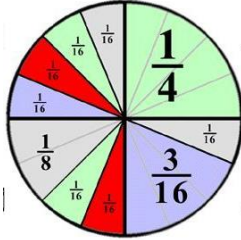

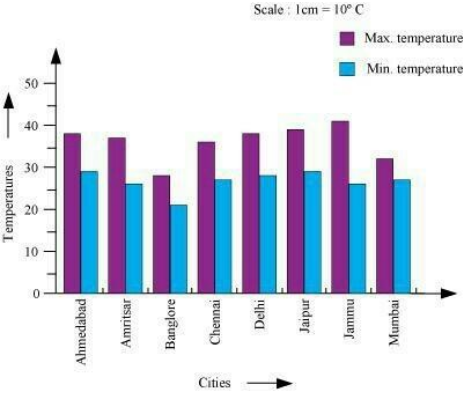
CLASS -- VII

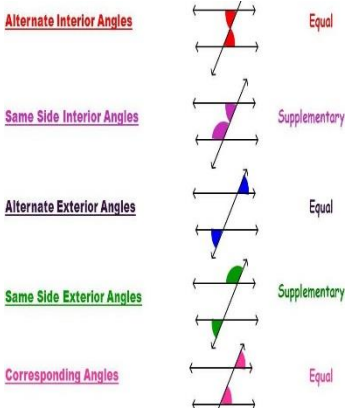
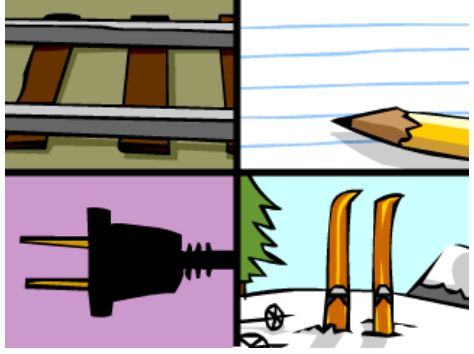
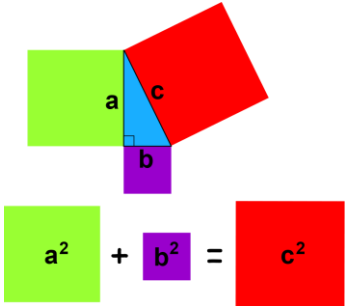

VISION FOR TEACHING MATHEMATICS:

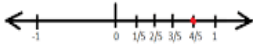

The vision is to provide mathematics instruction that will encourage students to become accurate, efficient and flexible problem solvers. Students must have the chance to struggle with meaningful problems, discuss possible solutions with their peers, create mathematical arguments and place these arguments before a group of their peers who can provide feedback.

APRIL TO SEPTEMBER

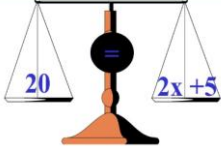
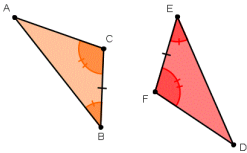

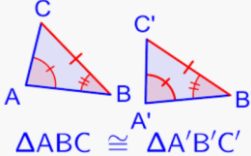
CHAPTER	TRANSACTION STRATEGIES / INNOVATIVE PEDAGOGY	LEARNING OUTCOME	CORE SKILLS/ART INTEGRATION/ INTERDISCIPLINARY LINKAGES
<p>1) INTEGER</p> <p>-Addition & subtraction -Multiplication & division - Properties of addition, multiplication, subtraction, division. -additive inverse</p> 	<ul style="list-style-type: none"> Explaining Integer system using VENN DIAGRAM through a PDF. Add and subtract integers using number line by stepwise jumping to right side if +ve number is to be added and to left side if -ve number is to be added. Rules of multiplication & division will be explained by interactive method by doing multiple examples on whiteboard. 	<p>The students will be able to</p> <ul style="list-style-type: none"> Add, subtract, multiply and divide integers. Verify properties by taking different integers. Apply the concepts to solve problems 	<ul style="list-style-type: none"> Core Skills <ul style="list-style-type: none"> Analytical skills, Logical thinking, Decision making, Problem solving, Applications. Art Integration <ul style="list-style-type: none"> As every positive integer there exists a negative integer. This concept will be explained to understand the bad and good virtues in daily life. Students will be motivated to follow good values and stay away from bad values. Interdisciplinary Linkages <ul style="list-style-type: none"> Science (Physics), Astronomy 
<p>2) FRACTION & DECIMALS</p> <p>-Addition & subtraction - Multiplication & division</p>	<ul style="list-style-type: none"> Activating prior knowledge by random questioning. Explaining fractions by using many figures of 	<ul style="list-style-type: none"> Multiply and divide fractions & decimals. Comprehend, analyze and solve word problems 	<ul style="list-style-type: none"> Core Skills <ul style="list-style-type: none"> Analytical skills, Logical thinking, Problem solving, Observation skills, Applications. Art Integration

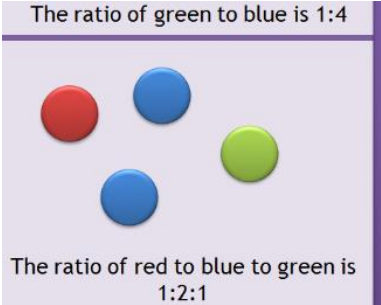
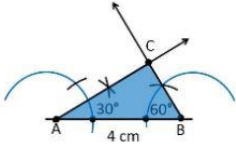
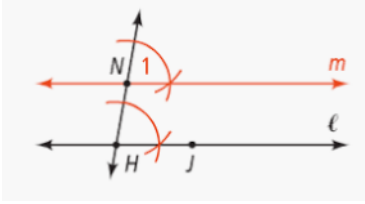
<p>-Multiplication & division of decimals.</p> 	<p>various shapes divided into equal parts.</p> <ul style="list-style-type: none"> Rules of operations will be explained by deductive method by solving many examples on the white board. Active participation of students will be made possible while assessing the topics by showing the pictures. 	<p>based on these concepts.</p>	<ul style="list-style-type: none"> Draw diagrams representing different fractions. Also draw the art designs of Sikkim in the part representing fraction.  <ul style="list-style-type: none"> Interdisciplinary Linkages <ul style="list-style-type: none"> Science (Physics), Geography
<p>3) DATA HANDLING</p> <p>-Organization of data -Mean , mode, median -Bar graph -Double bar graph -Probability</p> 	<ul style="list-style-type: none"> Activating prior knowledge by random questioning. Introducing the organization of data by a FUN GROUP ACTIVITY in which students will be asked about their favourite fruit, then they will organize this data into a bar graph. Means of central tendency will be covered by <u>interactive method</u> in which many examples from daily life will be discussed and explained on whiteboard. 	<ul style="list-style-type: none"> Select the most suitable representative value of the data in any specific situation. Represent data in the form of bar graph. 	<ul style="list-style-type: none"> Core Skills <ul style="list-style-type: none"> Self Awareness, Logical thinking, Problem solving, Observation skills, Applications, Team Building. Art Integration <ul style="list-style-type: none"> Read any news paper for one week and note down the maximum and minimum temperature of the day. Compare the difference by drawing a double bar graph. Use art designs of Sikkim  <ul style="list-style-type: none"> Interdisciplinary Linkages <ul style="list-style-type: none"> Science (Physics), Geography, Sports.
<p>5) LINES & ANGLES</p> <p>-Complementary & Supplementary angles -Linear pair &Vertically opposite angles</p>	<ul style="list-style-type: none"> Activating prior knowledge by random questioning. The concepts were explained by interactive method by 	<ul style="list-style-type: none"> Know the concepts of Complementary & Supplementary angles. 	<ul style="list-style-type: none"> Core Skills <ul style="list-style-type: none"> Analytical skills, Logical thinking, Observation skills, Critical thinking, Applications. Art Integration



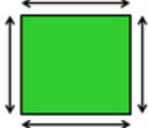
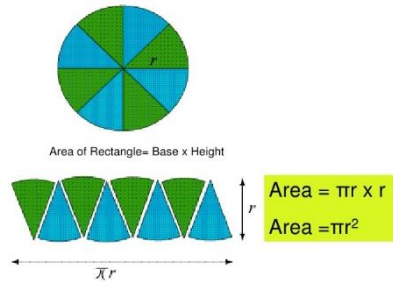
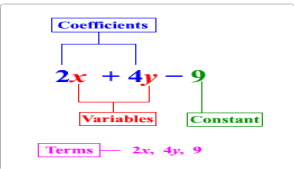

<p>-Parallel lines & Transversal</p> 	<p>discussing various figures drawn on whiteboard. The students will <u>learn concepts by doing</u> these activities:</p> <ul style="list-style-type: none"> Act: To cut the given pair of co-interior angles and paste them by placing side by side to obtain a straight angle. Act: Use the protractor to measure all angles a transversal make with parallel lines and deduce the properties of angles through their observations. The students will identify different pairs of angle in figures drawn on BB during assessment. 	<ul style="list-style-type: none"> Identify linear pair & vertically opposite angles. Find unknown angles in a given figure using the concepts of parallel lines & transversal. 	<ul style="list-style-type: none"> Teacher will ask the students to observe and find out the different geometrical patterns seen around them like intersecting lines, pair of parallel lines, pair of adjacent angles, vertically opposite angles on the wall paper, gift papers, gates, roads, buildings, play ground etc.  <ul style="list-style-type: none"> Interdisciplinary Linkages <ul style="list-style-type: none"> Science (Physics), Geography, Sports.
<p>6) THE TRIANGLE & ITS PROPERTIES</p> <p>-Median & Altitude -Exterior angle property -Angle sum property -Sum of 2 sides of a triangle -Pythagoras property</p>  $a^2 + b^2 = c^2$	<ul style="list-style-type: none"> The properties of a triangle will be deduced by <u>doing the activities</u> : ACT: Exterior angle property by cut and paste method. ACT : Angle sum property by cut and paste method. Active participation of students will be made possible. 	<ul style="list-style-type: none"> Find unknown angles in a given figure using exterior angle property & angle sum property. Apply Pythagoras property in practical problems. 	<ul style="list-style-type: none"> Core Skills <ul style="list-style-type: none"> Logical thinking, Observation skills, Decision making, Applications. Art Integration <ul style="list-style-type: none"> By cut and paste method students will verify angle sum property and exterior angle property  <ul style="list-style-type: none"> Construct special types of triangles by cut and paste method and arrange them in a hierarchy using flowchart <ul style="list-style-type: none"> Interdisciplinary Linkages <ul style="list-style-type: none"> Science (Physics), Sports.

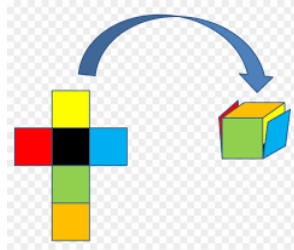
<p>9) RATIONAL NUMBERS</p> <ul style="list-style-type: none"> -Rational number on number line -Standard form & equivalent rational numbers -Rational number B/W 2 rational numbers. -Operations on rational numbers. <p>Representation of rational numbers on number line</p> 	<ul style="list-style-type: none"> • Activating prior knowledge by random questioning about fractions. Topics will be introduced by interactive method by doing many problems on the BB. The similar questions will be given to students to check their grasp of the concepts. • For assessing the topics, MCQ test on Google Forms will be used. 	<ul style="list-style-type: none"> • Plot a rational number on a number line. • Find any number of rational numbers between two given rational numbers. • Comprehend, analyze & solve word problems. • Find any number of rational numbers between any 2 rational numbers. 	<ul style="list-style-type: none"> • Core Skills <ul style="list-style-type: none"> • Analytical skills, Logical thinking, Problem solving, Observation skills, Applications. • Art Integration <ul style="list-style-type: none"> • The value: caring by sharing is imbibed in their minds using the concept of fractions and rational numbers. • Students will be asked to cut a circle into equal parts and shade the portion representing the fractions.  <ul style="list-style-type: none"> • Interdisciplinary Linkages <ul style="list-style-type: none"> • Science (Physics), Geography
<p>13) EXPONENTS and POWERS</p> <ul style="list-style-type: none"> -Exponents -Laws of exponents -Standard form 	<ul style="list-style-type: none"> • <u>Deductive method</u> will be used to introduce the topic by explaining various examples. The laws of exponents will be explored through many examples. 	<ul style="list-style-type: none"> • Expand exponential numbers. • Apply laws of exponents to simplify expressions. • Write numbers in standard form as well as usual form. 	<ul style="list-style-type: none"> • Core Skills <ul style="list-style-type: none"> • Analytical skills, Logical thinking, Problem solving, Applications. • Art Integration <ul style="list-style-type: none"> • The students will develop interest in Astronomy & Space sciences when they learn to write very big numbers in a convenient way. • Memorize the laws of exponents in musical method. • Interdisciplinary Linkages <ul style="list-style-type: none"> • Science (Physics), Space science, Music

OCTOBER TO MARCH

CHAPTER	TRANSACTION STRATEGIES / INNOVATIVE PEDAGOGY	LEARNING OUTCOME	CORE SKILLS/ART INTEGRATION/ INTERDISCIPLINARY LINKAGES
<p>4) SIMPLE EQUATIONS</p> <p>-Framing an equation -Solving an equation -Practical applications</p> <p>An Equation is like a balance scale. Everything must be equal on both sides.</p> 	<ul style="list-style-type: none"> Activating prior knowledge by random questioning about framing expressions from statements which will be used to introduce equation formation. <u>Inductive method</u> will be used to explain rules of solving an equation. Then the rules will be verified by explaining many examples on whiteboard. The students will be given much practice to frame equations in practical situations. 	<ul style="list-style-type: none"> Frame equation for a given statement. Understand the rules to solve simple equations. Apply the concepts to practical situations. Construct an equation from a given solution. 	<ul style="list-style-type: none"> Core Skills <ul style="list-style-type: none"> Analytical skills, Logical thinking, Problem solving, Decision making, Applications. Art Integration <ul style="list-style-type: none"> The students will be able to apply the concepts to solve the mathematical fun games related to simple equations like MATHDOKU. Interdisciplinary Linkages <ul style="list-style-type: none"> Science (Physics)
<p>7) CONGRUENCE OF TRIANGLES</p> <p>-Congruent figures -Congruence criteria for triangles i.e. SSS, SAS, ASA, RHS</p>  	<ul style="list-style-type: none"> The topic will be introduced by <u>demonstration method</u>. To give the idea of congruence, the students will be shown many cutouts of triangles and they will identify the pairs which cover each other fully. Congruence criteria will be explained by solving many questions. Students will identify the right rule to be used in any problem. 	<ul style="list-style-type: none"> Understand the congruent figures. Apply correct criteria to prove congruence of 2 triangles. 	<ul style="list-style-type: none"> Core Skills <ul style="list-style-type: none"> Analytical skills, Logical thinking, Observation skills, Applications. Art Integration <ul style="list-style-type: none"> Read Sunday news paper for Children's Section and mark the errors in two identical looking pictures. Explore the congruent figures in nature Interdisciplinary Linkages <ul style="list-style-type: none"> Science (Physics), Geography, Sports.
<p>8) COMPARING QUANTITIES</p> <p>-Ratio & proportion -Percentage & its uses</p>	<ul style="list-style-type: none"> Activating prior knowledge by random questioning about ratio & proportion. Then the concept of comparing by percentages, will be introduced by interactive method. Variety of problems 	<ul style="list-style-type: none"> Use ratios & proportions in practical situations. Compare by percentages. 	<ul style="list-style-type: none"> Core Skills <ul style="list-style-type: none"> Analytical skills, Logical thinking, Problem solving, Decision making, Observation skills, Applications. Art Integration

<p>-Increase or decrease %, Loss or profit, simple interest</p>	<p>will be explained on BB and then students will apply the concepts to solve daily life problems.</p> 	<ul style="list-style-type: none"> • Convert ratios to percentages. • Compute simple interest. • <u>Help</u> others to find profit or loss in a certain transaction. 	<ul style="list-style-type: none"> • Students will correlate the concept ratio with the subject home science. The relationships between the amounts of various ingredients in recipes are essential to cooking the most delicious meals. • Enhancing cooking skills. • Interdisciplinary Linkages <ul style="list-style-type: none"> • Science (Physics), Geography, Commercial mathematics <div style="background-color: black; color: yellow; padding: 10px; text-align: center;"> <h2 style="margin: 0;">Mass Percent</h2> $\text{Mass \%} = \frac{\text{Mass of Solute}}{\text{Mass of Solution}} \times 100 \%$ $\text{Volume \%} = \frac{\text{Volume of Solute}}{\text{Volume of Solution}} \times 100 \%$ </div>
<p>10) PRACTICAL GEOMETRY</p> <p>-Construction of parallel line, -Construction of triangles</p> 	<ul style="list-style-type: none"> • Constructions will be done on white board with the help of models of geometrical instruments. Students will <u>learn by doing</u> all types of constructions themselves. 	<ul style="list-style-type: none"> • Construct parallel lines. • Construct triangles by SSS, SAS, ASA, RHS criterion. 	<ul style="list-style-type: none"> • Core Skills <ul style="list-style-type: none"> • Logical thinking, Observation skills, precision, accuracy, neatness, concentration, and critical thinking. • Art Integration <ul style="list-style-type: none"> • Students will be asked to construct triangles using given data. • Students will be asked to construct parallel lines using set squares and also using paper folding method. • Interdisciplinary Linkages <ul style="list-style-type: none"> • Science (Physics), Art and craft
<p>11) PERIMETER & AREA</p> <p>-Perimeter & area of Square, Rectangle, Parallelogram, Triangle and circles</p> <p>-Applications</p>	<ul style="list-style-type: none"> • <u>Inductive method</u> will be used to introduce the topic by explaining the formulas and then multiple questions will be discussed on the basis of these rules and will be solved on BB. The students will <u>learn by applying</u> the concepts to practical situations. 	<ul style="list-style-type: none"> • Find perimeter & area of square, rectangle, triangle, parallelogram & circles. • Apply the concepts in practical situations. 	<ul style="list-style-type: none"> • Core Skills <ul style="list-style-type: none"> • Analytical skills, Logical thinking, Problem solving, Observation skills, Applications. • Art Integration <ul style="list-style-type: none"> • Observe the School ground and observe different geometrical shapes and measure their dimensions to find area and perimeter.

<p>Perimeter: </p> <p>Area: </p>	<p>What is Perimeter?</p> <p>The perimeter is the distance all the way around the outside of a 2D shape.</p> 		<ul style="list-style-type: none"> Area of circle by cut and paste method.  <ul style="list-style-type: none"> Interdisciplinary Linkages <ul style="list-style-type: none"> Science (Physics), Geography, Physical education, Natural science
<p>12)ALGEBRAIC EXPRESSION</p> <ul style="list-style-type: none"> -Terms & coefficients -Like & unlike terms -Addition and subtraction of expressions -Use in formulas and rules 	<ul style="list-style-type: none"> The topics will be explained by interactive method by doing many examples on the blackboard. Later similar problems will be given to the students to solve. Active participation of students will be made possible while assessing the topics through a quiz on smart board. 	<ul style="list-style-type: none"> Understand terms, coefficients, like & unlike terms. Add & subtract algebraic expressions. Apply the concepts to write rules and formulas. 	<ul style="list-style-type: none"> Core Skills <ul style="list-style-type: none"> Analytical skills, Logical thinking, Problem solving, Applications. Art Integration <ul style="list-style-type: none"> Create patterns using the rules to make paper merchandise (industry products like wallpaper, gift paper, etc.) Integrate algebraic expression with arts and visual arts. Interdisciplinary Linkages <ul style="list-style-type: none"> Science (Physics), Visual arts.
<p>14) SYMMETRY</p> <ul style="list-style-type: none"> -Line of symmetry -Rotational symmetry 	<ul style="list-style-type: none"> PAPER FOLDING method to find symmetric figures & line of symmetry. MIRROR IMAGE method to locate symmetry. Activity method in which students will make some figures on pages & then rotate in anticlockwise direction to observe symmetry. 	<ul style="list-style-type: none"> Locate line of symmetry. Identify rotational symmetry. 	<ul style="list-style-type: none"> Core Skills <ul style="list-style-type: none"> Observation skills, Applications. Art Integration <ul style="list-style-type: none"> To make Greeting Card by drawing symmetrical designs using paints and thread. To make greeting card using combination of symmetrical geometrical shapes Interdisciplinary Linkages <ul style="list-style-type: none"> Science (Physics), Sports.
<p>15) VISUALISING SOLID SHAPES</p>	<ul style="list-style-type: none"> <u>Demonstration method</u> in which the students will be 		<ul style="list-style-type: none"> Core Skills <ul style="list-style-type: none"> Observation skills, Applications.

<p>-Faces, edges and vertices for 3-D shapes</p> <p>-Drawing solids on a paper</p> <p>-Viewing different sections</p>	<p>shown models of 3-D shapes to give the idea of faces, edges and vertices.</p> <ul style="list-style-type: none"> Activity method: students will make nets of 3-D shapes and paste them to form 3-D shapes. They will draw solids on isometric paper. 	<ul style="list-style-type: none"> Identify faces, edges, vertices of a 3-D shape. Make nets for 3-D shapes. Draw solids by oblique sketches & isometric sketches. Identify different views of a 3-D figure. 	<ul style="list-style-type: none"> Art Integration <ul style="list-style-type: none"> Combine the knowledge of Nets and understanding of 3-D shapes to design their own geometrical 3-D designs.  <ul style="list-style-type: none"> Interdisciplinary Linkages <ul style="list-style-type: none"> Science (Physics), Architecture, Solid geometry
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