Vidya Pratishthan's Dr. Cyrus Poonawalla School (CBSE)

| Sub - Mathematics |  | Annual Planning, 2022-23 |  |  |  |  | Class - VII |
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| Sr.No | Month/Working days | Topic/Chapter | Sub <br> Topic/concept | Learning Objectives | Learning Outcome | $21^{\text {st }}$ century <br> skills/Competencies/Values | Activity |
| 1. | April <br> Working Days- $22$ <br> Period Availabe - $26$ | Bridge Course(12period) | 1.Knowing our numbers <br> 2.Whole <br> Numbers <br> 3.Playing with <br> 4.Numbers <br> 5.Basic <br> Geometric <br> Ideas <br> 6.Integers | Place Value, Indian and International System of Numeration, <br> Estimation, Roman Numbers Understanding different properties of whole numbers. <br> Applications of basic mathematical operations in daily life situations involving whole numbers. Multiples and factors Testing divisibility, Common Factors and Common Multiples, Prime Factorization, HCF and LCM, operations on integers (addition, subtraction) | 1. Able to understand, identify and read large numbers using both Indian and International System of Numeration. <br> 2. Use of Estimation in day to day Problems. <br> 3.Understanding Roman Numerals <br> 4. Applications of basic mathematical operations in daily life situations involving whole numbers. <br> 5 Understanding the prime factorization of a | 1. Understanding Basic Concepts <br> 2. Computational <br> 3. Reflection <br> 4. Application <br> 5. Properties of Numbers <br> 6. Logical thinking and reasoning. <br> 7.operations on integers (addition, subtraction) | Worksheet $1,2,3$ |


|  |  |  |  |  | number. <br> 6.Write the multiples of two or more numbers, find their common multiples and to find the least common multiple. 7. Understands and extends the number family from natural numbers to integers through whole numbers. |  |  |
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|  |  | Integers (14period) <br> Recall <br> Properties of Addition and | Introduction | Recall integers in order to <br> differentiate between whole numbers and integers <br> Applies rules for multiplication and division in order to solve problems involving two integers with same or different signs Represent numbers with positive and negative signs in order to apply to various situations |  | Critical thinking and problem solving. | To multiply and divide integers using unit squares of different colours. |




|  |  |  |  | statement <br> Apply properties of division of integers in order to simplify arithmetic expressions |  |  |  |
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| 2. | June <br> Working Days16 <br> No. of period-19 | Fractions and <br> Decimals (12period) <br> Multiplication of Fractions <br> Multiplication of a Fraction by Whole Number <br> Multiplication of a Fraction by |  | Define proper, improper and mixed fractions in order to distinguish between them <br> Multiply (or divide) numerator and denominator with the same number in order to write equivalent fractions <br> Convert unlike fractions into like fractions in order to compare them. <br> Extend concept of | Applies repeated addition and subtraction in order to interpret the division and multiplication of fractions. <br> For example, interprets $2 / 3 \mathrm{x}$ $4 / 5$ as $2^{\wedge} / 3$ of 4/5. <br> Also $1 / 4 \div 1 / 2$ is interpreted as how many $1 / 4$ make $1 / 2$ ? <br> Expresses a fraction as percentages and decimals in order to solve daily life problems. For example, calculates $15 \%$ of Rs 100 to say that $100 \times 0.15=$ Rs 15 | 1. Share and care. (moral education) <br> 2.Time management : <br> 3.Aesthetic sense - To make beautiful drawing to show fraction number <br> 4.Critical thinking and problem solving. | To multiply fractions using a sheet of paper. <br> To divide fractions using a number line. To multiply two decimals up to one place using a square grid. |




|  |  |  |  | to infer left shift in decimal point <br> Divide decimal number by a <br> whole number in order to solve questions related to decimals <br> Convert decimals into fractions in order to divide decimal number by another decimal number | $\text { as } 40 / 120$ |  |  |
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| 3. | June-July No. of working days-26 Period -23 |  |  |  |  |  |  |
|  |  | Data Handling (12period) <br> Introduction <br> Collecting data <br> Organising data <br> Representative Values <br> Arithmetic Mean | 12 | Collect, record and present data in order to organize experiences and draw inferences from them <br> Organize raw data into tabular form in order to make data easier to Interpret <br> Calculate average in order to represent the central tendency of the | Represents data pictorially in order to interpret data using bar graph such as | Calculation, drawing , observation Collaboration Communication Flexibility and adoptability | Drawing and Reading double bar graph. |




|  |  |  |  | Construct simple equations in order to solve them for the given contextual problems/puzzles. |  |  |  |
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| 5. | August <br> Working Days- <br> 23 <br> Period-13 <br> ( Periodic Test) | Lines and Angles (10period) <br> Introduction <br> Related Angles | Complementary Angles <br> Supplementary Angles <br> Adjacent Angles <br> Linear Pair <br> Vertically <br> Opposite Angles | Recall the concept of line, line segment and angles in order to identify them in the given figure(s). <br> Examine different angles in order to identify complementary angles. <br> Examine different angles in order to identify supplementary angles. <br> Examine different angles in order to determine the measure of their complement and supplement <br> Describe adjacent angles in order to identify a pair of adjacent angles in the given angles | Classifies pairs of angles based on their properties in order describe linear, supplementary, complementary, adjacent and vertically opposite angles | Drawing and keen observation, Complementing each other Collaboration | To verify that vertically opposite angles are equal. To verify experimentally that when two parallel lines are cut- <br> i) Each pair of corresponding angles is equal ii) Each pair of alternate interior angles is equal iii) Each pair of interior angles on same side of transversal is supplementary. iv) Each pair of exterior angles on same side of transversal are supplementary. |



|  |  |  |  | determine the measure of unknown angles. <br> Create a strategy in order to determine whether the given lines are parallel or not. |  |  |  |
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| 6. | August- <br> September <br> Working Days24 <br> (Periods10) |  |  |  |  |  |  |
|  |  | The triangle and its properties(15period) <br> Introduction <br> Medians of a triangle <br> Altitude of a triangle <br> Exterior angle of a triangle and its property |  | Compare different triangles in order to classify them on the basis of their sides and angles <br> Recall the parts of a triangle in order to describe it for the given triangle.and its properties <br> Describe median of a triangle in order to identify it for the given triangle <br> Describe altitude of a triangle in order to identify it for the given | Applies angle sum property of a triangle to calculate unknown angles of a triangle when its two angles are known | 1. To know properties of triangle and its implementation. <br> 2. Analyzing the things <br> 3. Experiential learning <br> 4. Collaboration | i) Medians and Altitudes of a triangle by paper folding. <br> ii) To verify <br> Pythagoras theorem. <br> iii) To verify triangle inequality property iv) Angle sum property of a triangle. <br> v) Exterior angle property of a triangle. <br> vi) To verify that in an isosceles triangle angles opposite to the |



|  |  |  |  | Apply the Pythagoras property in order to find the length of the unknown side in a right-angled triangle. Use appropriate properties in order to determine whether the given triangle is possible or not. |  |  |  |
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| 7. | September |  |  |  |  |  |  |
|  |  | Congruence of triangles(10period) | Congruence of plane figures <br> Congruence among line segments <br> Congruence of angles | Experiment superposition of different figures in order to verify congruence of two figures <br> Experiment superposition of different lengths in order to understand congruence of two, line segments and vice versa <br> Experiment | Applies the similarity rules in order to explain the congruency of triangles on the basis of the information given about them like (sss, sas, asa, rhs) | - Computational Skill <br> - Applying to solve daily life problems using the concepts of congruence. | To understand that each diagonal of a parallelogram divides it into two congruent triangles. |



|  |  |  |  | criterion of congruency in order to check whether the given triangles are congruent or not. |  |  |  |
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| 8. | October Working Days18 <br> Period-16 |  |  |  |  |  |  |
|  |  | Comparing Quantities 16 <br> Comparing Quantities using percentage | Introduction <br> Equivalent ratios <br> Meaning of Percentage <br> Converting Fractional Numbers to Percentage | Compare quantities in order to represent them as ratio <br> Compare the units of the quantities in order to represent them in ratio <br> Convert ratios into like fractions and compare them in order to <br> identify equivalent <br> ratios <br> Equate ratios in order to represent them in proportion <br> Represent equal ratios in proportion in order to find missing term(s) <br> Convert denominators of fractions into 100 in order to represent them in percentages | Applies algorithm to calculate percentages in order to calculate profits, loss and rate of interest in simple interest calculation | 1. Comparison of two quantities <br> 2. Social and moral values. <br> 3. Business attitude <br> 4. Honesty and truthfulness | - |



|  |  |  |  | know how many of a given situation <br> Convert ratios to percentages in order to solve problems based on real life <br> Calculate increase or decrease in quantity as percentage in order to examine change in quantity based on real life problems |  |  |
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| 9. | November Working days20 <br> Period-24 |  |  |  |  |  |
|  |  | Rational Numbers $10$ | What are rational numbers | Define rational numbers in order to classify a number as a rational number <br> Applies appropriate mathematical operations on rational numbers in order to solve problems related to <br> daily life situations <br> Represent integers in the form of numerator/denominator | Critical thinking and Problem solving |  |



|  |  |  | Operations on rational numbers: <br> Addition, subtraction, multiplication, division | infer that there are infinite rational numbers between any 2 given rational numbers <br> Apply the rules of rational numbers operations in order to simplify arithmetic operations |  |  |  |
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| 10. | November | Practical Geometry $10$ | Construction of line parallel to given line, though a point not on the line <br> Constructing a triangle when length of 3 sides are known (SSS criterion) <br> Constructing a triangle when the lengths of two sides and measure of angle between them are known (SAS) <br> Construct triangle when measure of 2 | Use a ruler and compass in order to construct a line parallel to another line through a point not on the line. <br> List and execute steps in order to construct a triangle given the measures of its three sides. <br> List and execute steps in order to construct a triangle when any of its two lengths and an angle between them is given. <br> List and execute steps in order to construct a triangle when any of its two angles and the side included between them | Uses ruler and a pair of compasses in order to construct a line parallel to a given line from a point outside the line and the triangles | Creativity Productivity and Accountabilbty | To draw a line parallel to a given line through an external point by paper folding. |


|  |  |  | angles and one side are known (ASA) <br> Construct a right-angled triangle when length of one leg and hypotenuse are known (RHS) | is given. <br> List and execute steps in order to construct a right-angled triangle when the length of one leg and its hypotenuse are given. <br> Examine the given information in order to determine if construction of a triangle from it is possible or not. |  |  |  |
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| 11. | December <br> Working Days21 Period-17 |  |  |  |  |  |  |
|  |  | Perimeter and Area 15 | Introduction <br> Squares and Rectangles: | Describe the area and perimeter of plane figures in order to find the same for square and rectangle <br> Uses unit square grid/graph sheet in order to approximate the area of a closed shape <br> Give example(s) in order to explain/discuss that increase in perimeter of a plane figure does not always mean that area will also increase <br> Use unit square grid |  | Critical Thinking and Problem solving Creativity and Innovation | To verify that congruent triangles have equal area but two triangles with equal in area may not be congruent. <br> To derive formula for the area of a parallelogram. To find the circumference of a circle and hence to find the value of $\pi$, experimentaly |






|  | January |  |  |  |  |  |  |
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|  |  | Exponents and powers(10 periods) | Exponents <br> Laws of Exponents <br> Multiplying Powers with the Same Base <br> Dividing Powers with the Same Base | Describe exponential form of numbers in order to express numbers in exponential notation. <br> Applies properties of exponential numbers in order to simplify problems involving multiplication and division of large numbers <br> Examine the exponential form of the given number in order to identify its base and exponent. <br> Examine the numbers given in exponential form in order to compare and represent them in an order. <br> Find prime factors of numbers in order to express them as the product of powers of prime factors. | I <br> Applies properties of exponential numbers in order to simplify problems involving multiplication and division of large numbers | Flexibility and Adoptability |  |


|  |  |  | Taking Power of a <br> Power <br> Multiplying <br> Powers with <br> the Same <br> Exponents <br> Dividing <br> Powers with <br> the Same <br> Exponents <br> Miscellaneous <br> examples of <br> laws of <br> Exponents <br> Decimal <br> Number system <br> Expressing <br> large <br> numbers in <br> standard <br> form | Apply laws of exponents in order to simplify a given expression <br> Write numbers using powers of 10 in order to express them in standard form <br> Expand the given number using powers of 10 in order to express it in the exponent form <br> Represent large numbers in exponential form in order to read, understand and compare them easily. |  |  |
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| 14 | February <br> Working Days - $20$ | Symmetry 10 | Introduction | Give examples and nonexamples in order to describe symmetrical figures. | Collaboration Communication Information Literacy Technology Literacy | To determine if a figure shows rotational symmetry with respect to a rotation of $90^{\circ}$ |


|  |  |  | Lines of symmetry for regular polygons <br> Rotational symmetry <br> Line symmetry and rotational symmetry | Determine lines of symmetry for the given figures in order to classify them on the basis of no. of lines of symmetry. <br> Examine regular polygons in order to determine their lines of symmetry. <br> Complete the mirror reflection of the given figure(s) along the mirror line (i.e., the line of symmetry) in order to identify the figure <br> Give example(s) for rotational symmetry in order to describe their centre of rotation and the direction of rotation. <br> Examine the given figure in order to determine its angle of rotation. <br> Examine the given figure in order to determine its order of Rotation | The students will be able to define symmetry and identify and list examples of symmetrical objects, both manmade and in nature |  | and $180^{\circ}$ |
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|  |  |  |  | Examine the given figures in order to identify figures which have both line symmetry as well as rotational symmetry |  |  |
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| 15. | February | Visualising Solid Shapes( 10 Periods) | Introduction: <br> Plane figures and solid shapes <br> Faces, edges and Vertices | Discuss and give examples in order to differentiate between plane figures and solid shapes <br> Examine different solid shapes in order to identify and count their number of faces, edges and vertices | Flexibility and Adoptability Critical Thinking. Creativity and Inovation | To draw oblique and isometric sketches of cube and cuboid. |
|  |  |  | Nets for building 3D Shapes | Build nets of 3D shapes in order to understand their properties |  |  |
|  |  |  | Drawing solids on a flat Surface <br> Oblique <br> Sketches | Examine oblique sketches in order to visualise all the faces of a solid shape |  |  |
|  |  |  | Isometric Sketches Visualising Solid Objects | Use isometric dot sheet in order to draw isometric sketches of a 3D shape <br> Draw 3D objects in 2D in order to visualize solid objects from |  |  |



