

Mathematics VII Standard

| Unit No. & Topic | Expected learning outcomes | Content | Transactional Teaching Strategy | Teaching Aids | No. of Periods |
|------------------|--|---|---|--|----------------|
| 3. Measurements | <p>To appreciate the need for planning to optimize utilization of one's resources</p> <p>To study road maps, Railway guides and to identify alternate routes</p> <p>To calculate time and cost by alternate routes and identify the quickest and the cheapest</p> <p>To understand that the cheapest route may not be the faster one and vice-versa.</p> | 3.1. Planning | <p>Use life situations to explain how different.</p> <p>Routes can be taken for the same destination Compare distance, times and cost of such travel</p> <p>Compare alternate modes of travel</p> | <p>Life examples</p> <p>Road maps,</p> <p>Train guides,</p> <p>Atlas</p> | |
| | <p>To recall the perimeter and area formula for square, rectangle and rt. Triangle</p> <p>To derive formula for parallelogram, triangle, rhombus and trapezium</p> | <p>3.2 Perimeter and Area</p> <p>3.2.1 Square, Rectangle and Right triangle – revision</p> <p>Parallelogram, Rhombus, Triangles and Trapezium</p> | Through paper cutting methods, derive the formula for different shapes | <p>Paper cutting</p> <p>Cardboard models</p> | |
| | <p>To know how to find the perimeter and area of circle</p> <p>To know to find the perimeter and area of a semi-circle and a quadrant</p> | <p>3.2.2 Circles and Sectors (Semi circle and quadrant only)</p> | <p>Through paper cutting introduce methods to find area</p> <p>Arrive at an approximate value for tabulating diameter and perimeter of circles of different sizes</p> | <p>Paper cutting</p> <p>Cardboard models.</p> | |

| | | | | | |
|-----------------------------|---|---|--|-----------------------------|-----------------------|
| | To calculate the area of tangular pathways and circular rings | 3.2.3. Pathways Rectangul ar and circular | | | |
| | To understand the shapes of cuboids and cubsTo recognize the relationship between edges vertices and faces To derive the formula for volume of cuboids and cubes | 3.3 Volumes Cuboids and cubes | Through unit cubes measure and find the relationship between length breath and height and volume | Models of cuboids and cubes | |
| Unit No. & Topic | Expected learning outcomes | Content | Transactional Teaching Strategy | Teaching Aids | No. of Periods |
| 4. Algebra | To understand the meaning of coefficients and powers of variables To recognize polynomial expression To substitute values for variables and evaluate an express | 4.1 Polymomi al Expressio n | Introduce monomial, binomial, trionmial expression in 1, 2, and 3 degrees. Substitution of values in formulas for areas and perimeter of figures | | 30 |
| | To understand the nature of a variable and a constant To be able to frame simple equations using place holder or literator | 4.2 Place Holder Variables | Introduce variables through place holders, Examples from life situation Number puzzles | Puzzles | |
| | To be able to transfer variables to one side and the constants to the other side To know how to solve a simple equation To verify the corrections of solution | 4.3 Simple equations Solutions | Starting from the models $X+a=b$ $ax+b=c$ and $ax+c=cx+d$ etc., | | |

| | | | | | |
|--------------------|---|---|--|--|-----------|
| 5. Geometry | <p>To recognize and approximate Symmetry in figures</p> <p>To identify mirror symmetry in squares, rectangles, parallelogram, isosceles triangle and other figures occurring in nature</p> <p>To find the line of symmetry in mirror symmetry</p> <p>To rotate figures through 90, 60, 120, 180 & degrees and verify whether there is change or not</p> <p>To be able to obtain different rotational symmetries</p> | 5.1 Symmetry Mirror and rotational Symmetries, Line or axis of symmetry | <p>Introduce ideal of symmetry through flowers, leaves etc. and geometrical figures.</p> <p>Give sufficient opportunities to students to identify all kinds of symmetries.</p> <p>Let students rotate figures like square equilateral triangle etc., which have rotational symmetry</p> <p>Let them identify the angle of rotation for rectangle etc.,</p> | <p>Figures in nature Geometry, Kolam</p> <p>Symmetrical figures with vertical axis Symmetry in alphabets</p> | 30 |
|--------------------|---|---|--|--|-----------|

| Unit No. & Topic | Expected learning outcomes | Content | Transactional Teaching Strategy | Teaching Aids | No. of Periods |
|-----------------------------|---|-------------------|--|--|-----------------------|
| | <p>To appreciate the beauty of tessellations</p> <p>To draw figures tessellating squares, rectangles, triangles, hexagons etc.</p> <p>To find out which figures are suitable for tessellation and which are not</p> <p>To recognize that only figures with vertex angles 60, 90 and 120 degree tessellate</p> | 6.2 Tessellations | <p>Introduce through patterns in tiles, floors behaviour etc.</p> <p>Ask to find whether circles tessellate and whether all kinds of triangles tessellate</p> <p>Let student try with regular pentagon, octagon and do-decagon</p> | <p>Tiles, floor etc.</p> <p>Card-board cutouts squares, hexagon, octagon, do-decagon</p> | 25 |

| | | | | | |
|--|---|--|--|---|--|
| | To understand the nature of different kinds of transformations To test for invariance in transformations To distinguish between mirror and rotational symmetry with special reference to orientation of figures | 6.3 Transformations Reflection, Rotation, Translation and Guide reflection Isometric transformations | Let students name geometrical figures and test for orientation The image in the mirror of a person can be used to explain orientation | Different sets of figures Cardboard cutboard cutout, Triangles, squares etc. | |
| | To verify and understand the properties of angles as stated in content | 5.4 Lines and Triangles The following properties to be learnt, Angles in interesting lines Adjacent angles on a line Parallel lines and transversal Sum of angles of a triangle | Paper folding activity | Paper folding | |

| Unit No. & Topic | Expected learning outcomes | Content | Transactional Teaching Strategy | Teaching Aids | No. of Periods |
|------------------|--|---|--|------------------------|----------------|
| | To know how to divide a line segment in a given ratio To identify the center of symmetry for enlargement of figures To make a point inside the figures and enlarge the figures To enlarge figure by extending the sides | 6.1.Similarity 1.Divide a line segment in a given ratio 2. Enlarge a triangle or quadrilateral in a ration 1:kKEN | Through Black board demonstration Let students know that there are infinite ways of enlargement | Geometrical instrument | 25 |

| | | | | | |
|--|---|--|---|---|------------|
| | To know how to draw a line parallel to a given line using, setsquares To be able to draw equilateral triangle and right triangle | 6.2. Parallel lines 6.3 Triangles Drawing, Special triangles | Demonstrate with geometrical instrument Demonstration on black board | Geometrical instrument Geometrical instruments | |
| | To read and interpret a frequent table To prepare frequency table for a given data | 7.1 Classifying data Raw data, grouped data Frequency table | Classroom data to be used | Mark sheets height and weight etc. Newspaper cutting | 24 |
| | To know how to draw histogram to depict the data in a frequency table To interpret histogram and frequency polygon | 7.2 Representin g of data Histogram and Frequency Polygon | Use available data in the classroom | | |
| | To draw linear graph to show the relationship between speed and time, distance and time | 7.3 Travel graphs Speed – time Distance – time graphs | | Roadmaps, Railway guides | |
| | | | | Total | 224 |