

## Class 7<sup>th</sup> – Mathematics

### 1. Integers

- Introduction to integers
- Recall on integers
- Addition and subtraction properties
  - Commutative property
  - Associative property
  - Additive property
- Multiplication on Integers
- Multiplication properties
  - Closure under multiplication
  - Commutative
  - Multiplication by zero
  - Multiplicative identity
  - Associative
  - Distributive
  - Making multiplication easier
- Division on integers
- Properties of division of integers

### 2. Fractions and decimals

- Introduction
- Methods of learning about fractions
- Multiplication on fractions
  - Fraction by a whole number

- Fraction by a fraction
- Division on fractions
  - Whole number by a fraction
  - Fraction by a whole number
  - Fraction by another fraction
- How well have you learnt about Decimal numbers
- Multiplication on decimal numbers
  - Multiplication by 10,100,1000
- Division of Decimal numbers
  - Division by 10,100,1000
  - Division by whole number
  - Division by another Decimal number

### **3. Data Handling**

- Introduction
- Collection of data
- Organisation of data
- Representative values
- Arithmetic mean
  - Range
- Mode
- Median
- Use of bar graphs with a different purpose
  - Choosing a scale
- Chance and probability

### **4. Simple equation**

- A mind reading game
- Setting of an equation
- Review
- What is equation
  - Solving an equation
- More equations
- From solution to equation
- Applications of simple equations to practical situation

## 5. Lines and Angles

- Introduction
- Related angles
  - Complementary angles
  - Supplementary angles
  - Adjacent angles
  - Linear pair
  - Vertically opposite angles
- Pairs of lines
  - Intersecting lines
  - Transversal
  - Angle made by transversal
  - Transversal of parallel lines
- Checking for parallel lines

## 6. Triangles and its Properties

- Introduction
- Medians of a triangle
- Altitudes of a triangle

- Exterior angle of a triangle and its properties
- Angle sum property of a triangle
- Two special triangles : Equilateral and isosceles
- Sum of the lengths of two sides of a triangle
- Right -angled triangles and Pythagoras property

## **7. Concurrence of triangles**

- Introduction
- Congruence of plane figures
- Congruence among line segments
- Congruence of angles
- Congruence of triangles
- Criteria for congruence of triangles
- Congruence among right angled triangles

## **8. Comparing Quantities**

- Introduction
- Equivalent ratios
- Percentage- another way of comparing quantities
  - Meaning of percentage
  - Converting fractional numbers to percentage
  - Converting decimals to percentage
  - Converting percentages to fractions or decimals
  - Fun with estimation
- Use of percentages
  - Interpreting percentages

- Converting percentages to -how many
- Ratios to percents
- Increase or decrease as percent
- Prices related to an item or buying and selling
  - Profit or loss as a percentage
- Charge given on Borrowed money or simple interest
  - Interest for multiple years

## 9. Rational numbers

- Introduction
- Need for rational numbers
- What are rational numbers
- Positive and negative rational numbers
- Rational numbers on a number line
- Rational numbers in standard form
- Comparison of rational numbers
- Rational numbers between two rational numbers
- Operations on Rational numbers
  - Addition
  - Subtraction
  - Multiplication
  - Division

## 10. Practical Geometry

- Introduction
- Construction of a line parallel to a given line, through a point not on the line
- Construction of triangles

- Constructing a triangle when the lengths of its three sides are known
- Constructing a triangle when the lengths of its two sides and the measure of the angle between them are known
- Constructing a triangle when the measures of two of its angles and the length of the side included between them is given
- Constructing a Right-Angled Triangle When The Length of one leg and its hypotenuse are given (RHS CRITERION)

## 11. Perimeter and Area

- Introduction
- Squares and rectangles
  - Triangles as parts of rectangles
  - Generalising for other Congruent parts of rectangle
- Area of Parallelogram
- Area of a triangle
- Circles
  - Circumference of a circle
  - Area of a circle
- Conversion of units
- Applications

## 12. Algebraic Expression

- Introduction
- How are expressions formed

- Terms of an expression
- Like and unlike terms
- Monomials , Binomials, Trinomials and Polynomials
- Addition and Subtraction of Algebraic expressions
- Finding the value of an expression
- Using Algebraic Expression -formulas and rules

### **13. Exponents and Powers**

- Introduction
- Exponents
- Laws of exponents
  - Multiplying powers with the same base
  - Dividing powers with the same base
  - Taking power of a power
  - Multiplying powers with the same exponents
  - Dividing powers with the same exponents
- Miscellaneous examples using the laws of exponents
- Decimal number system
- Expressing large numbers in the standard form

### **14. Symmetry**

- Introduction
- Lines of symmetry for regular polygons
- Rotational Symmetry
- Line symmetry and Rotational symmetry

### **15. Visualising solid and shapes**

- Introduction: Plane figures and solid shapes
- Faces , edges and vertices
- Nets for building 3-D shapes
- Drawing solids on a flat surface
  - Oblique sketches
  - Isometric sketches

- Visualising solid objects
- Viewing different sections of a solid
  - One way to view an object is by cutting or slicing
  - Another way is by shadow play
  - Third way is at by looking at it from certain angles to get different views

