Math Olympiad Syllabus Class 8

1. Rational numbers
   - Write fractions in simplest form
   - Least common denominator
   - Round decimals and mixed numbers
   - Write a repeating decimal as a fraction
   - Convert between decimals and fractions or mixed numbers
   - Absolute value of rational numbers
   - Compare rational numbers
   - Put rational numbers in order

2. Linear equations in one variable
   - Linear equations
   - Equations of horizontal and vertical lines
   - Finding slope from two points
   - Slopes of horizontal and vertical lines
   - Writing an equation from a graph
   - Writing an equation from a slope and y-intercept
   - Converting from point-slope form to slope-intercept form

3. Understanding Quadrilaterals
   - Types of polygon and angle sum property of a quadrilateral
   - Polygon - Angle sum
   - Properties of parallelogram
   - Properties of special quadrilaterals
   - Application of properties of quadrilaterals

4. Squares and square roots
   - Square roots of perfect squares
   - Estimate positive square roots
   - Positive and negative square roots
   - Estimate positive and negative square roots
   - Relationship between squares and square roots
   - Solve equations using square roots

5. Cubes and cube roots
   - Cube roots of positive perfect cubes
   - Cube roots of positive and negative perfect cubes
   - Solve equations using cube roots
   - Estimate cube roots
   - Relationship between cubes and cube roots

6. Comparing quantities
   - Ratio & Percentages
   - Profit and Loss
   - Profit and Loss percentages
   - Compound interest
   - Discounts and Taxes

7. Algebraic Expressions and identities
   - Evaluate expression
   - Identify terms and coefficients
   - Factors of linear and variable expressions
   - Properties of Expressions
   - Algebraic Identities
   - Applying Identities

8. Mensuration
   - Perimeter and area of combination figures
   - Area of Trapezium, Rhombus and a general quadrilateral
   - Area of a polygon / hexagon
   - Solid Shapes - Surface area of cube , cuboid and cylinder
   - Surface Area : Cylinder
   - Volume of cube , cuboid and cylinder

9. Exponents and powers
   - Exponents
   - Properties of exponents
   - Adding and subtracting numbers in scientific notation
   - Multiplying and dividing numbers in scientific notation

- Negative Exponents and Laws

10. Direct and inverse proportions
    - Write and solve equations for proportional relationships
    - Find the constant of variation
    - Identify direct variation and inverse variation
    - Direct Proportion
    - Inverse Proportion
    - Solve proportionality Questions.

11. Factorisation
    - Factorisation of Algebraic Expression
    - Factorisation of Algebraic Expression - using identities
    - Factorisation of Algebraic Equation - splitting the middle term
    - Division of Algebraic Expressions by Monomials
    - Division of Algebraic Expressions: Polynomials by polynomials

12. Introduction to graphs
    - Cartesian plane and line graphs
    - Quadrants
    - Identifying values of cartesian points
    - Interpreting and drawing linear graphs

13. Playing with numbers
    - Factors
    - Divisibility rules
    - Prime or composite
    - Prime factorization
    - Greatest common factor
    - Least common multiple
    - GCF and LCM: word problems
    - Sort factors of numerical expressions