The Grammar School
Mathematics Syllabus for Placement in Class 2

1. Factors, multiples and prime numbers. Lowest Common Multiple, Highest Common Factor and problems

2. Round integers to a given power of 10

3. Divisibility by 2, 3, 4, 5, 6, 8, 9, 10

4. Fractions and decimals: the four operations with brackets

5. Powers and Roots

6. Negative Numbers

7. Symbolic Expressions – Removing of Brackets

8. Substitution

9. Linear Equations

10. Geometry with angles (straight lines, vertically opposite, angles at a point, triangles, quadrilateral, parallel lines)

11. Graphs – Plotting of a straight line, point of intersection between two straight lines

12. Area and Perimeter of triangle, square, rectangle, parallelogram and trapezium, circle and compound shapes

13. Units of length, mass, time and total surface area. Converting from one unit to another

14. Volume and Total Surface area of a cube and cuboid

15. Construction of triangle, parallelogram and circle

16. Ratio

17. Proportion – direct and inverse

18. Percentages - percentage increase and decrease. Reverse percentage

The Grammar School
Mathematics Syllabus for Placement in Class 3

1. Working with numbers
    - Degrees of accuracy (decimal places; significant figures)
    - Standard Form
    - Upper and lower bounds
    - Recurring decimals
2. Pythagoras Theorem and its applications
3. Trigonometry: use of sine, cosine and tangent and their applications
4. Rhombus, Trapezium and Kite: their properties, area and perimeter
5. Polygons
6. Angle of elevation and depression
7. Laws of Indices: their use for simplifying and evaluating – expressions and solving equations
8. Total surface Area of Solids: Cube, Cuboid
9. Multiplication of 2 brackets – Algebraic Expressions
10. Solution of linear equations. Algebraic problems on perimeter, area, volume and total surface area
11. Factorisation (common factor only). Using factorization to express in lowest terms, a fractional expression
12. Changing the subject of a formula – simple cases
13. Simultaneous Equations: methods of Substitution and Elimination – graphically and algebraic
14. Equation of a straight line $y = mx+c$. Gradient and y intercept.
    Finding the equation of a straight line. Horizontal and vertical lines, parallel lines, perpendicular lines. Sketching a straight line.
15. Sets, two set problems, shading, set language
16. Transformations – using geometric constructions – Reflection, Rotation, Enlargement and Translation

The Grammar School
Mathematics Syllabus for Placement in Class 4

1. Simplifying algebraic expressions with brackets

2. Understand the concept of a quadratic expression and be able to factorise such expressions

3. Manipulate algebraic fractions where the numerator and/or the denominator can be numerical, linear or quadratic

4. Solve quadratic equations by factorization and by using the quadratic formula

5. Form and solve quadratic equations from data given in a context

6. Solve linear inequalities using a number line and represent simple linear inequalities on rectangular Cartesian graphs. Identify regions on rectangular Cartesian graphs

7. Interpret information presented in a range of linear and non linear graphs. Plot and draw graphs with equation: $y = ax^2 + bx + c$. Find the intersection points of two graphs, one linear and one non linear. Graphical solutions of quadratic equations

8. Understand the terms face, edge and vertex in the context of a three-dimensional solid. Use Pythagoras theorem in 3-dimensions. Apply trigonometrical methods to solve problems in 3 dimensions including finding the angle between a line and a plane. Find the volume and total surface area of right prisms, including cuboids and cylinder, right circular cone and sphere using an appropriate formula

9. Understand angle measure including three-figure bearings

10. Find perimeter and area of a circle and a sector of a circle (segment and arc). Find the area of a triangle using $A = \dfrac{1}{2}ab\sin C$

11. Understand angle measure including three-figure bearings

12. Circle properties

13. Tangent properties of a circle

14. Intersecting chords

15. Vectors

16. Statistics (Bar charts, pie charts, histogram, mean, mode, median and range, frequency tables)