YEAR 6 – PRIMARY SCHOOL

Mathematical content	Success indicators	Teaching hours
UNIT 1 Revision	Recite, read, write and recognize numbers up to 1000000. Compare and order natural numbers up to 1000000. Synthesize and analyze numbers up to 1000000. Estimate and calculate the sum, difference, product and quotient of numbers up to 100000 and verify their answer. Use and formulate mental calculation strategies with integers and decimal numbers. Describe, fill in, extend, construct, explain the rule, and find inductively the general term of numerical and geometric patterns. Use the properties of operations (commutativity, associativity and distributivity) to simplify mental calculations and to check their answers. Solve and construct routine, multi-step problems and process problems.	**15**
UNIT 2 Integers (positive and negative) Addition and subtraction of integers (positive and negative) Order of operations Properties of operations Interpretation and construction of charts Minimum and maximum value Range of values Arithmetic mean	Use negative numbers in everyday life. Compare and rank rational numbers (positive and negative) and define their position on the number line. Estimate and evaluate mathematical calculations of addition and subtraction that include negative integers. Use order of operations to simplify mental and written calculations and check their results. Simplify mathematical expressions and calculate their value for particular variable values. Explain the order and properties of operations algebraically and geometrically and use them to simplify expressions with integers, decimals and fractions. Read and construct bar charts, pictograms, pie charts, line charts, stem and leaf graphs and differentiate between the presentation of continuous and discrete data with or without the use of technology. Evaluate different ways of presenting data in terms of their effectiveness and consistency.	**16**

	Describe and compare sets of data, using the mean, median, mode and maximum and minimum values.	
UNIT 3 Powers Numbers up to a billion Euclidean division Divisibility criteria for 3 and 9 Prime and composite numbers Prime factor decomposition Highest common factor Lowest common multiple	Read, write and recognize numbers up to 1000000000. Compare and order natural numbers up to 1000000000. Synthesize and analyse numbers up to 1000000000. Develop and apply algorithms involving the four operations with integers, using a variety of strategies. Explain the meaning of power and square root, calculate positive powers of integers, express integers in index form and calculate the square root of square numbers. State, explain and apply divisibility criteria for 2, 3, 4, 5, 8, 9, 10 and 25. Explore and distinguish prime and composite numbers. Calculate Highest common factor and Lowest common multiple of two or more numbers. Define prime numbers, check if a number is prime and apply the sieve of Eratosthenes to find prime numbers.	**18**
UNIT 4 Types of angles Complementary and supplementary angles Angle sum in a triangle Secondary triangle elements (height, median, bisector)	Evaluate, measure, classify and construct angles (with or without the use of technology). Calculate the sum of angles of polygons. They use dynamic geometry software to understand and demonstrate relationships. Construct the height, median and bisector and observe the characteristic points of the triangle (center of gravity, incenter, orthocentre). Construct the middle of a line segment, the distance between parallel lines, and the distance between a point and a line. Recognize and name angles in the plane and space (eg complementary and supplementary, vertically opposite angles). Recognize, describe and construct two-dimensional and three-dimensional shapes, angles, parallel and vertical straight lines.	**7**

UNIT 5 Concept of fraction (part of surface, part of set) Equivalence and simplification of fractions Mixed numbers and improper fractions, conversions Comparison and order of fractions and mixed number Addition and subtraction of fractions and mixed numbers	Read, write, recognize, compare and order fractions and decimals (up to two decimal places). Interpret fractions as part of a unit, as part of a set, as a measure and as a quotient. Use various means of representing and strategies, to simplify fractions and find equivalent forms. Simplify and calculate equivalent fractions using the lowest common multiple and the highest common factor. Refer to and implement mental calculation strategies with integer, fractional, decimal numbers and percentages. Make estimates of the result of a calculation and check the validity of their answers. Simplify mathematical expressions and calculate the value of mathematical expressions for specific values of variables. Solve and rearrange equations.	**16**
UNIT 6 Polygons, regular polygons Sum of angles in polygons Properties of parallelograms Trapezium	Distinguish between fixed and variable properties of a shape and compare classes of shapes based on their properties. Recognize, describe and construct 2 dimensional and 3 dimensional shapes, angles, parallel and perpendicular lines. Recognize, name and describe the basic elements and properties of triangles, trapezia, parallelograms, polygons and circles. Calculate the sum of angles in a polygon.	**10**
UNIT 7 Concept of ratio Fractions, decimals, percentages, conversions Estimation of sum and difference of decimals Calculation of sum and difference of decimals	Read, write, recognize, compare and order fractions and decimals (up to two decimal places). Convert decimals to fractions and percentages, and vice-versa. Round numbers to the nearest ten, hundred, thousand, million and decimals to the nearest tenth and hundredth. Explore the concept of ratio, distinguish between two proportional and not proportional numbers, and report when a relationship is in direct or indirect proportion. Estimate and calculate results with positive rational numbers. Report and apply mental calculation strategies involving integers, fractions, decimals and percentages. Formulate and solve problems with rational numbers and percentages, and check the rationality of their response. Estimate results and check the rationality of their answer.	**13**

UNIT 8 Multiplication and division of fractions (all cases) Multiplication and division of mixed numbers	Estimate and calculate results involving positive rational numbers. Report and apply mental calculation strategies involving integers, fractions, decimals and percentages. Formulate and solve problems with rational numbers and percentages, and check the rationality of their response. Estimate results and check the rationality of their answer.	**16**
UNIT 9 Multiplication and division of decimals	Estimate and calculate results involving positive rational numbers. Report and apply mental calculation strategies involving integers, fractions, decimals and percentages. Formulate and solve problems with rational numbers and percentages, and check the rationality of their response. Estimate results and check the rationality of their answer.	**14**
UNIT 10 Algebraic expressions Equations Variables Patterns Ordered pairs Functions	Describe, complete, extend, construct and explain the rule and find inductively the general term of arithmetic and geometric patterns. Use ordered pairs to represent everyday life information (eg performance of a student in maths and language) Draw in a coordinate axes system ordered pairs or data given in a table. Realise the concept of a function as a "one-to-one mapping" through tables, diagrams and charts. Describe, represent, explain and find the general form of functions. Represent graphically general types of functions. Simplify mathematical expressions and determine their value for specific variable values. Solve and manipulate equations. Write mathematical expressions or equations involving variables to represent information and solve problems. Solve and construct routine problems involving multiple steps. Solve problems by determining the next term or the missing term in a pattern, describe verbally the rule of the pattern and express the n^{th} term in verbal or symbolic form. Extend and construct patterns using integers, decimals and fractions. Understand the properties of arithmetic and geometric progressions and investigate ways to determine the general term. Translate algebraic sets in verbal form, and vice-versa.	**12**

UNIT 11 Ratio, proportion Percentages, solving problems Charts Probability	Explore the concept of ratio, distinguish between two proportional and not proportional numbers, and report when a relationship is in direct or indirect proportion. Formulate and solve proportion problems. Explore and define the ratio, the proportion of numbers and proportion properties. Record the results of random experiments in a systematic way with multiple repetitions (with or without the use of technology). Predict and calculate the probability of an event, using the concept of ratio. Record and count the number of possible combinations of events of two or more sets.	**13**
UNIT 12 Circle Perimeter and area of compound shapes Transformations Solid geometry Volume	Use units of measure of length (mm, cm, m, km), mass (kg, g, tonne), capacity (L, ml) and volume of shapes (m^3, cm^3). Calculate the perimeter and area of the trapezium and compound shapes. Calculate the volume and external surface area of 3 dimensional shapes, using various means and software. Calculate the circumference and area of a circle using various means and software. Solve problems that involve relationships between radius, diameter, area and circumference of a circle. Recognize, name and describe the basic elements and properties of the circle. Predict and justify the results of splitting, combining and transforming 2 dimensional and 3 dimensional shapes. Recognize, describe and construct 2 dimensional and 3 dimensional shapes, angles, parallel and perpendicular lines. Represent 3 dimensional shapes and interpret 2 dimensional representations of 3 dimensional shapes. Construct polygons and drawings with multiple axes of symmetry or shapes that are symmetric with respect to a point. Describe and apply transformations (rotation through a given angle, translation, reflection along one or more axes) to 2 dimensional and 3 dimensional shapes. Split and combine 2 dimensional and 3 dimensional shapes.	**12**
TOTAL		**162**