St. Teresa's Catholic Primary School Maths Skills Progression Class 8

Term	Maths Topics and Learning Objectives		
Autumn	**Number, Place Value and Rounding** • Read Roman numerals to 1,000 (M) and recognise years written in Roman numerals. • Determine the value of each digit in numbers up to 1,000,000. • Count forwards or backwards in steps of powers of 10 for any given number up to 1,000,000. • Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero. • Read, write, order and compare numbers to at least 1,000,000 (*read, write, order and compare numbers up to 10,000,000.*) • Round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000 (*round any number to any given amount.*) • Determine the value of each digit in numbers up to 10,000,000.	**Calculations (Addition, Subtraction, Multiplication and Division)** • Add and subtract whole numbers with more than 4 digits, including using formal written methods. • Add and subtract numbers mentally with increasingly large numbers. • Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why. • Multiply numbers up to 4 digits by a 1-digit or 2-digit number using a formal written method, including long multiplication for 2-digit numbers. • Solve problems involving multiplication and division including using knowledge of factors and multiples, squares and cubes. • Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000. • Divide numbers up to 4 digits by a 1-digit (*2-digit numbers*) number using the formal written method of short division *and interpret remainders appropriately for the context*. • Solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates. • Multiply and divide numbers mentally drawing on known facts. • Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign. • Use square numbers and cube numbers, and the notation for squared and cubed. • Establish whether a number up to 100 is prime and recall prime numbers up to 19. • Use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers. • *Identify multiples and factors, including finding all factor pairs or a number and common factor pairs of two numbers.* • Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy. • *Perform mental calculations, including with mixed operations and large numbers.* • *Use knowledge of the order of operations to carry out calculations involving the four operations.*	**Fractions, Decimals and Percentages** • Recognise mixed numbers and improper fractions and convert from one form to the other. • Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams (*multiply simple pairs of proper fractions, writing the answer in the simplest form*). • Compare and order fractions whose denominators are multiples of the same number. • Solve problems involving numbers up to 3 decimal places. • Solve problems which require knowing percentage and decimal equivalents of ½, ¼, 1/5, 2/5, 4/5 and those fractions with a denominator or a multiple of 10 or 25. • Write mathematical statements >1 as a mixed number. • Write percentages as a fraction with denominator hundred, and as a decimal. • Round decimals with 2 decimal places to the nearest whole number and 1 decimal place. • Read, write, order and compare numbers with up to 3 decimal places. • Read and write decimal numbers as fractions. • Recognise the percent symbol and understand that percent relates to 'number parts per hundred'. • Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths. • Recognise and can use thousandths and relate them to tenths, hundredths and decimal equivalents. • Add and subtract fractions with the same denominator and denominators that are multiples of the same number. • *Divide proper fractions by whole numbers.* • *Add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions.* • *Use common factors to simplify fractions and use common multiples to express fractions in the same denomination.* • *Multiply 1-digit numbers with up to 2 decimal places by whole numbers.*

Spring	**Geometry – Properties of Shapes** • Draw given angles and measure them in degrees. • Distinguish between regular and irregular polygons based on reasoning about equal sides and angles. • Identify 3D shapes (*recognise and build simple 3D shapes, including making nets*), including cubes and other cuboids, from 2D representations. • *Draw 2D shapes given dimensions and angles.* • Use the properties of rectangles to deduce related facts and find missing lengths and angles. • *Illustrate and name parts of circles, including radius, diameter and circumference.* • *Know the diameter is twice the radius.* • *Estimate and compare acute, obtuse and reflex angles.* • Identify angles at a point and one whole turn. • Identify other multiples of 90º. • Identify angles at a point on a straight line and ½ a turn. • *Recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles.* • *Find unknown angles in any triangles, quadrilaterals and regular polygons.* • *Know angles are measured in degrees.*	**Measures: Converting Units; Perimeter and Area; Volume** • Use all four operations to solve problems involving money using decimal notation, including scaling. • Estimate volume and capacity (*calculate and compare volume of cubes and cuboids, using standard units).* • Understand and use approximate equivalences between metric units and common imperial units, such as inches, pounds and pints. • Measure and calculate the perimeter of composite rectilinear shapes in cm and m (*recognise that shapes with the same areas can have different perimeters and vice versa*). • Calculate and compare the area of rectangles (including squares), and including using standard units (cm2and cm3) to estimate the area of irregular shapes. • Convert between different units of metric measure (*converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation of up to 3 decimal places*). • *Solve problems involving converting between units of time (solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate.)* • *Convert between miles and kilometres.* • *Calculate the area of parallelograms and triangles.*	**Revision of Calculations and Fractions, Decimals and Percentages (Based upon AfL)**	
Summer	**Statistics** • Solve comparison, sum and difference problems using information presented in a line graph. • Complete, read and interpret information in tables, including timetables. • *Interpret and construct pie charts and line graphs and use these to solve problems.* • *Calculate and interpret the mean as an average.*	**Geometry – Position and Direction** • Identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed. • *Draw and translate simple shapes on the coordinate plane, and reflect them in the axes.* • *Describe positions on the full coordinate grid (all four quadrants)*	**Consolidation and Revision**	

Italics denote year six learning objectives