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

Term	Maths Topics and Learning Objectives
Autumn	**Number, Place Value and Rounding** / **Calculations (Addition, Subtraction, Multiplication and Division)**

Number, Place Value and Rounding

- read, write, order and compare numbers to at least 1,000,000 and determine the value of each digit
- 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 0
- round any number up to 1,000,000 to the nearest 10, 100, 1,000, 10,000 and 100,000
- solve number problems and practical problems that involve all of the above
- read Roman numerals to 1,000 (M) and recognise years written in Roman numerals

Calculations (Addition, Subtraction, Multiplication and Division)

- use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy
- solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
- identify multiples and factors, including finding all factor pairs of a number, and common factors of 2 numbers
- know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers
- establish whether a number up to 100 is prime and recall prime numbers up to 19
- multiply numbers up to 4 digits by a one- or two-digit number using a formal written method, including long multiplication for two-digit numbers
- multiply and divide numbers mentally, drawing upon known facts
- divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context
- recognise and use square numbers and cube numbers, and the notation for squared (^{2}) and cubed (^{3})
- solve problems involving multiplication and division, including using their knowledge of factors and multiples, squares and cubes
- solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equals sign
- solve problems involving multiplication and division, including scaling by simple fractions and problems involving simple rates

Geometry – Properties of Shapes

- identify 3-D shapes, including cubes and other cuboids, from 2-D representations
- know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
- draw given angles, and measure them in degrees (°)
- identify:
– angles at a point and 1 whole turn (total 360°)
– angles at a point on a straight line and half a turn (total 180°)
– other multiples of 90°
– use the properties of rectangles to deduce related facts and find missing lengths and angles
- distinguish between regular and irregular polygons based on reasoning about equal sides and angles

BASIC SKILLS, RECORDED IN BASIC SKILLS EXERCISE BOOKS AND REHEARSED ORALLY AS APPROPRIATE:

- Count in step of 2, 3 and 5 from 0, and in tens from any number, forward and backward
- Count in step of 4, 8, 50 and 100 from 0
- Recall and use multiplication and division facts for 2, 5 and 10 times tables
- Recall and use multiplication and division facts for 3, 4 and 8 times tables
- Recall multiplication and division facts using times tables up to 12 x 12
- Derive known facts from times table knowledge e.g. 7 x 2 = 14 so 70 x 2 = 140
- Mentally recall skills of doubling and halving
- Find 10 or 100 more or less than a given number
- Read Roman numerals to 100
- Round any number to the nearest 10, 100 or 1000
- Add and subtract numbers mentally including: a three-digit number and ones; a three-digit number and tens; a three-digit number and hundreds
- Add and subtract whole numbers using a formal written method
- 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
- Divide numbers up to 4 digits by a 1-digit number using the formal written method of short division
- multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000
- Find fractions of discrete objects

Autumn Term 1 KIRFs:

Year 6: Derive multiplication and division facts using multiples of 10 and decimal numbers e.g. 50 x 7 = 350; 8 x 0.7 = 5.6

Year 5: Consolidate multiplication and division facts for all times tables up to 12 x12.

Autumn Term 2 KIRF:

Year 6: Recall equivalences between simple fractions (including tenths and hundredths), decimals and percentages.

Year 5: Recognise square and cube numbers within 100.

Distributed daily practice of these basic skills and arithmetic skills to be informed by AfL;

the revisiting of stated objectives through recall activities is informed by teacher AfL.

Spring	**Fractions, Decimals and Percentages** • compare and order fractions whose denominators are all multiples of the same number • identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths • recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number [for example, 2/5+4/5 =6/5 =11/5] • add and subtract fractions with the same denominator, and denominators that are multiples of the same number • multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams • read and write decimal numbers as fractions [for example, 0.71 = 71/100] • recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents • round decimals with 2 decimal places to the nearest whole number and to 1 decimal place • read, write, order and compare numbers with up to 3 decimal places • solve problems involving number up to 3 decimal places • recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per 100', and write percentages as a fraction with denominator 100, and as a decimal fraction • solve problems which require knowing percentage and decimal equivalents of 1/2 ,1/4 ,1/5, 2/5 ,4/5 and those fractions with a denominator of a multiple of 10 or 25	**Measurement: Conversions** • convert between different units of metric measure [for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre] • understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints • solve problems involving converting between units of time

Spring: Basic Skills and Arithmetic Practice

BASIC SKILLS, RECORDED IN BASIC SKILLS EXERCISE BOOKS AND REHEARSED ORALLY AS APPROPRIATE:

- Count in multiples of 6, 7, 9, 25 and 1000
- 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
- Divide numbers up to 4 digits by a 1-digit number using the formal written method of short division Tell and write the time from an analogue clock, including Roman numerals, and 12-hour and 24-hour clocks
- Convert time between analogue and digital clocks
- Recall vocabulary am and pm
- Recall number of seconds in a minute, days in a given month, year and leap year
- Convert basic units of metric measure
- RECALL OF PREVIOUSLY TAUGHT BASIC SKILLS AND ARITHMEITC CALCULATIONS INFORMED BY REGULAR AfL.

Spring Term 1 KIRFs:

Year 6: Multiply and divide decimal numbers by 10, 100 and 1000.

Year 5: Multiply and divide whole numbers by 10, 100 and 1000.

Spring Term 2 KIRFs:

Year 6: Identify common factors of a pair of numbers.

Year 5: Recall decimal equivalents of the fractions ½, ¼, ¾, tenths and fifths.

Distributed daily practice of these basic skills and arithmetic skills to be informed by AfL;

the revisiting of stated objectives through recall activities is informed by teacher AfL;

sustained practice of these skill from both Spring and Autumn term applied to SATs style arithmetic papers to support and develop experience with answering a range of questions in a given time frame.

	Measurement: Perimeter and Area; Volume	Geometry – Position and Direction	Statistics	Consolidation and Revision
Summer	• measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres • calculate and compare the area of rectangles (including squares), including using standard units, square centimetres (cm²) and square metres (m²), and estimate the area of irregular shapes • estimate volume [for example, using 1 cm³ blocks to build cuboids (including cubes)] and capacity [for example, using water] • use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling	• 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 • use a 2-D grid and coordinates in the first quadrant	• solve comparison, sum and difference problems using information presented in a line graph • complete, read and interpret information in tables, including timetables	

Summer: Basic Skills and Arithmetic Practice

- Revisit skills from previous term(s). The distributed practice is informed by ongoing AfL.
- Year six learning objectives are interwoven where appropriate

Summer Term 1 KIRFs:

Year 6: Know all previous number bonds including decimals that total 1 or 10 (two decimal places).

Year 5: Convert between different units of metric measure (e.g. km/m; cm/m; cm and mm; g/kg; l/ml).

Summer Term 1 KIRFs:

Year 6: Double or halve any number with up to 2-decimal places.

Year 5: Recall prime numbers up to 19.

Distributed daily practice of these basic skills and arithmetic skills to be informed by AfL;

the revisiting of stated objectives through recall activities is informed by teacher AfL.