# St. Margaret's C.E. Junior School
# Year 5 Maths Curriculum Overview

## AUTUMN

**Number: Place value**

- Read Roman numerals to 1000 (M) and recognise years written in Roman numerals (NPV 3)
  - Roman numerals to 1,000
- Read and write numbers up to 1 000 000 and determine the value of each digit (NPV 1) (NPV 3)
- 1000's, 100's 10's and 1's. (NPV 2) (R)
  - Numbers to 10,000
  - Numbers to 100,000
  - Numbers to 1,000,000
  - Read and write numbers to 1,000,000
- Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 (NPV 2)
  - Powers of 10
  - 10/100/1,000/10,000/100,000 more or less
  - Partition numbers to 1,000,000
  - Number line to 1,000,000 (NPV 4)
- Compare and order numbers up to 1 000 000 and determine the value of each digit (NPV 3) ***(PS) Logical reasoning**
  - Compare and order numbers to 100,000
  - Compare and order numbers to 1,000,000
- Round to the nearest 10 & 100 (NPV 3 R)
- Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000
  - Round to the nearest 10, 100 or 1,000
  - Round within 100,000
  - Round within 1,000,000
- **Solve number problems and practical problems** that

## SPRING

**Number: multiplication and division B**

- Multiply and divide numbers mentally drawing upon known facts (NF 1) (MD 3) ***(PS) Looking for a pattern/open-ended problem solving**
- 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 (NF 1) (MD 3)
  - Multiply up to a 4-digit number by a 1-digit number
- Multiply 2 digits by 1 digit (MD 3) (R)
- Multiply 3 digits by 1 digit (MD 3) (R)
  - Multiply a 2-digit number by a 2-digit number (area model)
  - Multiply a 2-digit number by a 2-digit number
  - Multiply a 2-digit number by a 3-digit number
  - Multiply a 2-digit number by a 4-digit number
  - Solve problems with multiplication
- 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 (NF 1) (MD 4)
- Divide 2 digits by 1 digit (MD 4) (R)
- Divide 3 digits by 1 digit (MD 4) (R)
  - Short division
  - Divide a 4-digit number by a 1-digit number
  - Divide with remainders
  - Efficient division
  - Solve problems with multiplication and division

***(PS) Drawing a diagram**

## SUMMER

**Geometry: properties of shapes**

- Identify angles at a point and one whole turn (total 360°); at a point on a straight line and ½ a turn (total 180°) (G 1) (R)
  - Understand and use degrees
- Know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles
  - Classify angles
  - Estimate angles
- Draw given angles, and measure them in degrees (°) (G 1)
  - Measure angles up to 180°
  - Draw lines and angles accurately
  - Calculate angles around a point
  - Calculate angles on a straight line
- Use the properties of rectangles to deduce related facts and find missing lengths and angles
  - Lengths and angles in shapes
- Distinguish between regular and irregular polygons based on reasoning about equal sides and angles
- Triangles (R)
  - Regular and irregular polygons
  - 3-D shapes

**Geometry: position & 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 (R)

- Read and plot coordinates
- Problem solving with coordinates
- Translation
- Translation with coordinates

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| involve all of the above | | ➢ Lines of symmetry<br>➢ Reflection in horizontal and vertical lines |
| **AUTUMN** | **SPRING** | **SUMMER** |
| **Number: addition and subtraction**<br>• Add & subtract numbers **mentally** with increasingly large numbers<br>➢ Mental strategies<br>• Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)<br>• Add & subtract two 4-digit numbers one & more than 1 exchange (R)<br>➢ Add whole numbers with more than four digits<br>➢ Subtract whole numbers with more than four digits<br>• Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy<br>➢ Round to check answers<br>• **Solve addition & subtraction multi-step problems** in contexts, deciding which operations and methods to use and why<br>➢ Inverse operations (addition and subtraction)<br>➢ Multi-step addition and subtraction problems<br>➢ Compare calculations<br>➢ Find missing numbers<br>***(PS) Working backwards** | **Fractions B**<br>• Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams<br>➢ Multiply a unit fraction by an integer<br>➢ Multiply a non-unit fraction by an integer<br>➢ Multiply a mixed number by an integer<br>➢ Calculate a fraction of a quantity (F 1)<br>➢ Fraction of an amount (F 1)<br>➢ Find the whole<br>➢ Use fractions as operators<br>***(PS) Drawing a diagram** | **Decimals**<br>• Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (MD 1)<br>➢ Use known facts to add and subtract decimals within 1<br>➢ Complements to 1<br>➢ Add and subtract decimals across 1<br>➢ Add decimals with the same number of decimal places<br>➢ Subtract decimals with the same number of decimal places<br>➢ Add decimals with different numbers of decimal places<br>➢ Subtract decimals with different numbers of decimal places<br>➢ Efficient strategies for adding and subtracting decimals<br>➢ Decimal sequences ***(PS) Looking for a pattern**<br>➢ Multiply by 10, 100 and 1,000<br>➢ Divide by 10, 100 and 1,000<br>➢ Multiply and divide decimals – missing values<br>• **Solve problems** involving number up to three decimal places<br>**Negative Numbers**<br>• Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero (NPV 3)<br>➢ Understand negative numbers<br>➢ Count through zero in 1s<br>➢ Count through zero in multiples<br>➢ Compare and order negative numbers<br>➢ Find the difference |
| **Number: multiplication and division A**<br>• Identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers (NF 1) (MD 2)<br>➢ Multiples<br>➢ Common multiples<br>➢ Factors<br>➢ Common factors | **Decimals & Percentages**<br>• Read and write decimal numbers as fractions (F 3)<br>➢ Decimals up to 2 decimal places<br>• Recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents (NPV 1)<br>➢ Equivalent fractions and decimals (tenths)<br>➢ Equivalent fractions and decimals (hundredths)<br>Equivalent fractions and decimals | **Measurement: Converting Units**<br>• Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) (NPV 6)<br>• Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints (NPV 6) |

***(PS) Trial & improvement/open-ended problem solving**

- Know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers (MD 2)
  - Prime numbers
- Establish whether a number up to 100 is prime and recall prime numbers up to 19
- Recognise and use square numbers and cube numbers, and the notation for squared ($^2$) and cubed ($^3$) (MD 2)
  - Square numbers
  - Cube numbers
- **Solve problems involving multiplication and division** including using their knowledge of factors and multiples, squares and cubes (MD 2) ***(PS) Creating an organised list**
- Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 (NPV 1) (NF 2) (MD 1) (R)
  - Multiply by 10, 100 and 1,000
  - Divide by 10, 100 and 1,000
  - Multiples of 10, 100 and 1,000
- **Solve problems involving multiplication and division**, including scaling by simple fractions and problems involving simple rates
  - Thousandths as fractions
  - Thousandths as decimals
  - Thousandths on a place value
- Read, write, order and compare numbers with up to three decimal places (F 2)
  - Order and compare decimals (same number of decimal places)
    - Order and compare any decimals with up to 3 decimal places
- Round decimals with two decimal places to the nearest whole number and to one decimal place
  - Round to the nearest whole number
  - Round to 1 decimal place
- Recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred', and write percentages as a fraction with denominator 100, and as a decimal
  - Understand percentages
  - Percentages as fractions
  - Percentages as decimals
- **Solve problems** involving number up to three decimal places

***(PS) Drawing a table**

- **Solve problems** which require knowing percentage and decimal equivalents of ½ , ¼ , 1/5 , 2/5 , 4/5 and those fractions with a denominator of a multiple of 10 or 25 (F 3)
  - Equivalent fractions, decimals and percentages
  - Kilograms and kilometres
  - Millimetres and millilitres
  - Convert units of length
  - Convert between metric and imperial units
- **Use all four operations to solve problems involving measure [**for example, length, mass, volume, money] using decimal notation, including scaling
  - Convert units of time
  - Calculate with timetables

| AUTUMN | SPRING | SUMMER |
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| **Fractions A**<br>• Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths (F 2)<br>➢ Find fractions equivalent to a unit fraction<br>➢ Find fractions equivalent to a non-unit fraction<br>➢ Recognise equivalent fractions<br>• Recognise mixed numbers and improper fractions and convert from one form to the other and write mathematical statements > 1 as a mixed number<br>➢ Convert improper fractions to mixed numbers<br>➢ Convert mixed numbers to improper fractions<br>• Compare and order fractions whose denominators are all multiples of the same number (F 2) (R)<br>➢ Compare fractions less than 1<br>➢ Order fractions less than 1<br>➢ Compare and order fractions greater than 1<br>• Add and subtract fractions with the same denominator and denominators that are multiples of the same number (F 2)<br>➢ Add and subtract fractions with the same denominator<br>➢ Add fractions within 1<br>➢ Add fractions with total greater than 1<br>➢ Add to a mixed number<br>➢ Add two mixed numbers<br>➢ Subtract fractions<br>➢ Subtract from a mixed number<br>➢ Subtract from a mixed number - breaking the whole<br>➢ Subtract two mixed numbers | **Measurement: Perimeter and Area**<br>• Measure perimeter, perimeter on a grid, perimeter of rectangles, perimeter of rectilinear shapes (R)<br>• Measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres (G2)<br>➢ Perimeter of rectangles<br>➢ Perimeter of rectilinear shapes<br>➢ Perimeter of polygons<br>• Calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres ($cm^2$) and square metres ($m^2$) and estimate the area of irregular shapes (G2)<br>➢ Area of rectangles<br>➢ Area of compound shapes<br>➢ Estimate area | **Measurement: Converting Units**<br>• Convert between different units of metric measure (for example, kilometre and metre; centimetre and metre; centimetre and millimetre; gram and kilogram; litre and millilitre) (NPV 6)<br>• **Solve problems involving converting between units of time**<br>• **Use all four operations to solve problems involving measure** [for example, length, mass, volume, money] using decimal notation, including scaling<br>• Understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints<br>➢ Cubic centimetres<br>➢ Compare volume<br>➢ Estimate volume<br>➢ Estimate capacity |
| | **Statistics: interpreting line graphs** | **Measurement: Volume** |

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| | • Interpret charts, comparison, sum & difference (R)<br>• Introduce line graphs (NPV 4) (R)<br>➢ Draw line graphs<br>➢ Read and interpret line graphs<br>• Complete, read and interpret information in tables, including timetables (NPV 4)<br>➢ Read and interpret tables<br>➢ Two-way tables<br>➢ Read and interpret timetables<br>• **Solve comparison, sum and difference problems** using information presented in a line graph (NPV 4)<br>***(PS) Drawing a table** | • Estimate volume [for example, using 1 cm3 blocks to build cuboids (including cubes)] and capacity [for example, using water]<br>***(PS) Acting it out** |

**White Rose Maths Hub** & **Power Maths** schemes of learning are used to support medium term planning and as exemplification for maths objectives.
R- RECAP of previous objectives
➢ WRH Small Steps
Small steps can be combined into one lesson.

***(PS) PROBLEM SOLVING opportunities**

**DfE- Ready to progress criteria**
NF- Number Facts
NPV- Number & Place Value
AS- Addition & Subtraction
MD- Multiplication & Division
F- Fractions
G- Geometry

REMEMBER to complete **pre & post learning assessments**.
Only move on when the majority of pupils are secure in the objective.