Mathematics Programme of Study – Year 5

Number and Place Value

- I can recognise years written in Roman numerals.
- I can read Roman numerals to 1000 (M).
- I can solve number problems and practical problems, incorporating all of the below.
- I can round any number up to 1,000,000 to the nearest 10, 100, 1000, 10,000 and 100,000.
- I can use negative numbers in context and can count forwards and backwards with positive and negative whole numbers including through 0.
- I can count forwards or backwards in steps of powers of 10 for any given number up to1,000,000.
- I know what each digit represents in numbers to 1,000,000.
- I can read, write, order and compare numbers to at least 1,000,000.

Addition and Subtraction

- I can solve multi-step subtraction problems in contexts, deciding which operations and methods to use and why.
- I can solve multi-step addition problems in contexts, deciding which operations and methods to use and why.
- I can use rounding to check answers to calculations and determine in context levels of accuracy.
- I can subtract mentally using increasingly large numbers.
- I can add mentally using increasingly large numbers.
- I can subtract numbers with more than 4 digits using formal written methods (columnar -).
- I can add numbers with more than 4 digits using formal written methods (columnar +)

Multiplication and Division

- I can solve problems involving X and ÷, including scaling by simple fractions and simple rates.
- I can use all number operations to solve multi step problems.
- I can solve problems using multiplication and division, using knowledge of factors and multiples, squares and cubes.
- I can recognise and use square numbers and cube numbers, including notation.
- I can X and ÷ whole numbers and those involving decimals by 10, 100 & 1000.
- I can X and ÷ numbers mentally drawing upon known facts.
- I can interpret remainders in context.
- I can divide numbers up to 4 digits by a 1 digit number using the formal written method of short division.
- I can X numbers up to 4 digits by a one or 2 digit number using a formal written method including long x for two numbers.
- I can establish whether a number up to 100 is prime and recall prime numbers up to 19.
- I know and use the vocabulary of prime numbers, prime factors and composite (non-prime) numbers.
- I can identify multiples and factors, including finding all factor pairs, and common factors of two numbers.

Fractions, Decimals and Percentages

- I can solve problems drawing on knowledge of % 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.
- I can write percentages as a fraction with denominator of 100, and as a decimal.
- I can recognise the % symbol and understand what it means.
- I can solve problems involving numbers up to 3dp.
- I can read, write, order and compare number with up to three decimal places.
- I can round decimals with 2dp to the nearest whole number and to one decimal place.
- I can recognise and use 1000ths and relate them to 10ths, 100ths and decimal equivalents.
- I can read and write decimal numbers as fractions.
- I can multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams.
- I can + and - fractions with the same denominator and denominators that a multiples of the same number.
- I can recognise mixed numbers and improper fractions and convert from one form to another and write mathematical statements.
- I can identify, name and write equivalent fractions of a given fraction, represented visually including $^1/_{10}$ and $^1/_{100}$
- I can compare and order fractions whose denominators are all multiples of the same number.

Measurement

- I can use all four operations to solve measure problems involving decimal notation including scaling.
- I can use all four operations to solve problems involving measure (e.g. length, mass, volume, money)
- I can solve problems involving converting between units of time.
- I can estimate capacity e.g. using water.
- I can estimate volume e.g. using 1cm cube blocks to build cuboids
- I can estimate the area of irregular shapes.
- I can calculate and compare the area of squares and rectangles, using standard units, cm^2 and m^2.
- I can measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres.
- I understand and use approximate equivalences between metric units and common imperial units such as inches/pounds/pints.
- I can convert between different units of metric measure (e.g. km to m; cm and m: cm and mm; kg and g; l and ml).

Geometry

- I can identify, describe and represent the position of a shape follow translation using appropriate language and know that the shape has not changed.
- I can identify, describe and represent the position of a shape follow reflection using appropriate language.
- I can distinguish between regular and irregular polygons using my knowledge of equal sides and angles.
- I can state and use the properties of a rectangle to deduce related facts and find missing lengths and angles.
- I can identify multiples of 90 degrees.
- I can identify angles at a point on a straight line and 1/2 a turn.
- I can identify angles at a point and one whole turn.
- I can draw a given angle, and measure in degrees.
- I can estimate and compare acute, obtuse and reflex angles.
- I know angles are measured in degrees.
- I can identify 3-D shapes, including cubes and cuboids, from 2-D representations.

Statistics

- I can multiply pairs of multiples of 10, and a multiple of 100 by a 1 digit number using jottings.
- I can find the remainder after dividing a 2 digit number by a 1 digit number using jottings.
- I can double 3 digit multiples of 10 to 500 and find corresponding halves, using jottings.
- I can decide which representations of data are most appropriate and why, including ICT.
- I can connect my work on coordinates and scales to my interpretation of time graphs.
- I can read and interpret information in tables including timetables.
- I can complete information in tables including timetables.
- I can solve 'difference' problems using information presented inline graphs.
- I can solve 'sum' problems using information presented inline graphs.
- I can solve 'comparison' problems using information presented inline graphs.

Mental Strategies

- I can divide a multiple of 10 by a 1 digit number with jottings.
- I can multiply by 25 and 50 with jottings.
- I can multiply and divide 2 digit numbers by 4, 5, 8 and 20 with jottings.
- I can find the difference between near multiples of 100 or 1000 with jottings.
- I can add or subtract a pair of 3 digit multiples of 10 with jottings.
- I can add or subtract a pair of 2 digit numbers with jottings.
- I know factor pairs to 100.
- I know division facts and related unit fractions.
- I know what must be added to a 4 digit number to make the next multiple of 1000.
- I know what must be added to a decimal with units and tenths to make the next whole number
- I can double and halve decimals with 1 dp.
- I can add and subtract decimals with 1 dp.

Programme of study objectives taken from 'The National Curriculum 2014'

Developed by St Michaels CofE Bamford

Mental Strategies taken from 'Teaching Children to Calculate Mentally'