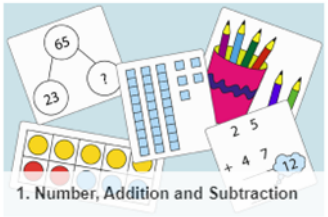
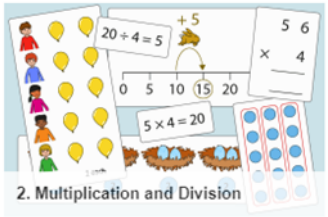
Stapleford Community Primary School

Ambitious Caring Excellence

Year 4 Maths

White Rose Scheme of learning and the NCETM PD materials





This document includes our long term plan for the Year which is aligned with the White Rose Scheme of Learning and the NCETM PD materials. At Stapleford we follow teaching for mastery and these materials and tools are used to guide our planning to ensure lessons build gradually and demonstrate coherence. We use progression documents to help us ensure learning follows on from what has come before and aim to develop cross curricular links with other subjects and across math topics (such as incorporating shape into other areas) to deepen learning. We also use Nrich regularly to reinforce learning and promote fluency of number and problem solving and reasoning.

The NCETM and DFE Maths guidance Year 4 gives guidance as to the progression through areas of study.

Year 4

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week10	Week 11	Week 12
AUTUMN	White Rose Number :Place Value NCETM 1.2.2 Composition and calculation: 1,000 and four-digit numbers				White Rose Number : Addition and subtraction				White Rose Measurement: length and perimeter NCETM 2.1.6 (some) Multiplicative contexts: area and perimeter 1	White Rose Number : Multiplication and Division NCETM 2.1.0 Connecting multiplication and division, and the distributive law 2.1.1 Times tables: 11 and 12 2.1.3 Calculation: multiplying and dividing by 10 or 100		

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week10	Week 11	Week 12
SPRING	White Rose Number : Multiplication and Division NCETM 2.1.2 Division with remainders 2.1.4 Multiplication: partitioning leading to short multiplication 2.15 Division: partitioning leading to short division 2.1.7 (here or after area and perimeter) Structures: using measures and comparison to understand scaling			White Rose Measurement: Area NCETM 2.1.6 (some) Multiplicative contexts: area and perimeter	White Rose Number : Fractions NCETM 3.5 Working across one whole: improper fractions and mixed numbers 3.6 Multiplying whole numbers and fractions				White Rose Number : Decimals NCETM 1.2.3 Composition and calculation: tenths 1.2.4 (some) Composition and calculation: hundredths and thousandths			CONSOLIDATION

	Week 1	Week 2	Week 3	Week 4	Week 5	Week 6	Week 7	Week 8	Week 9	Week10	Week 11	Week 12
SUMMER	White Rose Number : Decimals NCETM Recap 1 . 2 3 Composition and calculation: tenths Recap 1 . 2 4 (some) Composition and calculation: hundredths and thousandths		White Rose Measurement: money NCETM 1 . 2 5 Addition and subtraction: money		White Rose Measurement: Time		White Rose Statistics	White Rose Geometry: properties of shape		White Rose Geometry: position and direction		CONSOLIDATION

Year 4 Maths - Programme of Study

Taken from the National Curriculum

Number - number and place value

Pupils should be taught to:

- count in multiples of 6, 7, 9, 25 and 1,000
- find 1,000 more or less than a given number
- count backwards through 0 to include negative numbers
- recognise the place value of each digit in a four-digit number (1,000s, 100s, 10s, and 1s)
- order and compare numbers beyond 1,000
- identify, represent and estimate numbers using different representations
- round any number to the nearest 10, 100 or 1,000
- solve number and practical problems that involve all of the above and with increasingly large positive numbers
- read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of 0 and place value

Notes and guidance (non-statutory)

- Using a variety of representations, including measures, pupils become fluent in the order and place value of numbers beyond 1000, including counting in 10s and 100s, and maintaining fluency in other multiples through varied and frequent practice
- The begin to extend their knowledge of the number system to include the decimals numbers and fractions that they have met so far
- They connect estimation and rounding numbers to the use of measuring instruments
- Roman numerals should be put in their historical contexts so pupils understand that they have been different ways to write whole numbers and that the important concepts of 0 and place value were introduced over a period of time

Number - addition and subtraction

Pupils should be taught to:

- add and subtract numbers with up to 4 digits using the formal written methods of columnar addition and subtraction where appropriate
- estimate and use inverse operations to check answers to a calculation
- solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why

Notes and guidance (non-statutory)

- Pupils continue to practice both mental methods and columnar addition and subtraction with increasingly large numbers to aid fluency

Number - multiplication and division

Pupils should be taught to:

- recall multiplication and division facts for multiplication tables up to 12 × 12
- use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1; dividing by 1; multiplying together 3 numbers
- recognise and use factor pairs and commutativity in mental calculations
- multiply two-digit and three-digit numbers by a one-digit number using formal written layout
- solve problems involving multiplying and adding, including using the distributive law to multiply two-digit numbers by 1 digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects

Notes and guidance (non-statutory)

- Pupils continue to practise recalling and using multiplication tables and related division facts to aid fluency
- Pupils practise mental methods and extend this to 3-digit numbers to derive facts
- Pupils practice to become fluent in the formal written method of short multiplication and short division with exact answers
- Pupils write statements about the equality of expressions (for example , use the distributive law 39x7 = 30x7 + 9x7 and associative law (2x3)x4 = 2x (3x4). They combine their knowledge of number facts and rules of arithmetic to solve metal and written calculations for example, 2x6x5 = 10x6 = 60
- Pupils solve two-step problems in contexts, choosing the appropriate operation, working with increasingly harder numbers. This should include correspondence questions such as the number of choices of a meal on a meny, or 3 cakes shared equally between 10 children

Number - fractions (including decimals)

Pupils should be taught to:

- recognise and show, using diagrams, families of common equivalent fractions
- count up and down in hundredths; recognise that hundredths arise when dividing an object by 100 and dividing tenths by 10
- solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit fractions where the answer is a whole number
- add and subtract fractions with the same denominator
- recognise and write decimal equivalents of any number of tenths or hundreds
- recognise and write decimal equivalents to $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$

- find the effect of dividing a one- or two-digit number by 10 and 100, identifying the value of the digits in the answer as ones, tenths and hundredths
- round decimals with 1 decimal place to the nearest whole number
- compare numbers with the same number of decimal places up to 2 decimal places
- solve simple measure and money problems involving fractions and decimals to 2 decimal places

Notes and guidance (non-statutory)

- Pupils should connect hundredths to tenths and place value and decimals measure
- They extend the use of the number line to connect fractions, numbers and measures
- Pupils understand the relation between non-unit fractions and multiplication and division of quantities, with particular emphasis on tenths and hundredths
- Pupils make connections between fractions of a length, of a shape and as a representation of one whole or set of quantities. Pupils use factors and multiples to recognise equivalent fractions and simplify where appropriate
- Pupils continue to practise adding and subtracting fractions with the same denominator ro become fluent through a variety of increasingly complex problems beyond one whole. Pupils are taught throughout that decimals and fractions are different ways of expressing numbers and proportions
- Pupils' understanding of the number system and decimal place value is extended at this stage to tenths and then hundredths. This includes relating the decimals notation to division of whole number by 10 and late 100
- They practice counting using simple fractions and decimals, both forwards and backwards
- Pupils learn decimal notation and the language associated with it, including in the context of measurements. They make comparisons and order decimal amounts and quantities that are expressed to the same number of decimal places. They should be able to represent numbers with 1 or 2 decimal places in several ways, such as on number lines

Measurement

Pupils should be taught to:

- convert between different units of measure [for example, kilometre to metre; hour to minute]
- measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres
- find the area of rectilinear shapes by counting squares
- estimate, compare and calculate different measures, including money in pounds and pence
- read, write and convert time between analogue and digital 12- and 24-hour clocks
- solve problems involving converting from hours to minutes, minutes to seconds, years to months, weeks to days

Notes and guidance (non-statutory)

- Pupils build on their understanding of place value and decimal notation to record metric measures, including money
- They use multiplication to convert from large to smaller units
- Perimeter can be expressed algebraically as 2(a+b) where a and b are the dimensions in the same unit
- They relate area to arrays and multiplication

Geometry - properties of shapes

Pupils should be taught to:

- compare and classify geometric shapes, including quadrilaterals and triangles, based on their properties and sizes
- identify acute and obtuse angles and compare and order angles up to 2 right angles by size
- identify lines of symmetry in 2-D shapes presented in different orientations
- complete a simple symmetric figure with respect to a specific line of symmetry

Notes and guidance (non-statutory)

- Pupils continue to classify shapes using geometrical properties, extending to classifying different triangles `9for example, isosceles, equilateral, scalene) and quadrilaterals (for example, parallelogram, rhombus, trapezium).
- Pills compare and order angles in preparation for using a protractor and compare lengths and angles to decide if a polygon is regular or irregular
- Pupils draw symmetric patterns using a variety of media to become familiar with different orientations of lines of symmetry; and recognise line symmetry in a variety of diagrams, including where the line of symmetry does not dissect the original shape

Geometry - position and direction

Pupils should be taught to:

- describe positions on a 2-D grid as coordinates in the first quadrant
- describe movements between positions as translations of a given unit to the left/right and up/down
- plot specified points and draw sides to complete a given polygon

Notes and guidance (non-statutory)

- Pupils draw a pair of axes in one quadrant, with equal scales and integer labels. They read, write and use pairs of coordinates, for example (2,5) including using coordinate-plotting ICT tools

Statistics

Pupils should be taught to:

- interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs
- solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs

Notes and guidance (non-statutory)

- Pupils understand and use a greater range of scales in their representations
- Pupils begin to relate the graphical representation of data to decoding changes over time.

Year 4 Maths - Cross curricular maths

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Art - **Looking at shapes and perpendicular lines in Kandinsky art work when planning our art from recycling materials.**	DT - Measuring when making our bridges. What makes the strongest shape when designing bridges. **Also tessellation and symmetry**	History - timelines, How long were the AS and Vikings here for? DT/Art - Measuring our material for our purses	Computing - Measuring temperature as part of our computing	History - timeline ordering dates Finding out about Pythagoras and what he did as part of our Greek day BC dates as negative numbers DT/ Cooking counting, weighing, estimating	Art - Symmetry in patterns on totem poles PE - Measuring time and distances when doing athletics.

Year 4 - Nrich

This is an approximate guide. More activities can be included but those listed below are the minimum.

Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
Place Value Deca tree - multiples of 10 Comparing numbers Comparing numbers 2 Rounding Order distances **Addition and subtraction** Dice games + - Dice games + - 2 Adding and subtracting multiples of 1000 **Addition and subtraction problem solving** Dice totals Dominoes Sealed envelopes 15 cards	**Multiplication and division** estimation/ scaling Zios and Zepts * Remainders ** Carrying Cards * Multiples Grid (I) ** Multiplication Square Jigsaw (I) * Shape Times Shape * The Remainders Game Times Tables Shifts (I) * Table Patterns Go Wild! ** Light the Lights Again Let Us Divide! * Multiply Multiples 1 * Multiply Multiples 2 * Multiply Multiples 3 * Multiples statements Applying multiple/ times tables	**Multiplication and division** **See previous multiplication section** **Area** Area wallpaper Torn Shapes * Twice as Big? (I) *	**Fractions** Fractional Triangles * Fractional Wall * Bryony's Triangle * Chocolate ** Fractions in a Box ** Andy's Marbles ** **Decimals** Rounding decimals	**Measure** Comparing quantities	**Statistics** Take Your Dog for a Walk (I) ** Venn Diagrams * How Big Are Classes 5, 6 and 7? * **Properties of Shape** Symmetry Challenge *** Reflector ! Rotcelfer *** Four Triangles Puzzle (I) * Cut it Out *** Shapes on the Playground ** Nine-pin Triangles (I) * What Shape? * Quad Match ** Shape sorting Let Us Reflect * Stringy Quads **

					Counters in the Middle * **Position and direction** Coordinate Challenge Eight Hidden Squares A Cartesian Puzzle *