Y5/6 Numeracy Overview Block 5 [Year]

Week 1	Week 2	Week 3	Week 4	Week 5	Week 6
Unit 1 **Decimals, fractions, percentages** • **Using decimal notation up to 3 decimal places** • Multiply and divide decimals by 10,100 and integers by 1000 – explain the effect • Read write order and compare numbers up to 10 000 000 and determine the value of each digit • Round any number up to 1000 000 to the nearest 10, 100, 1000, 10000, 100000 • Round a number with 2 decimal places to the nearest tenth or whole number • Use common factors to simplify fractions, use common multiples to express fractions in the same denomination • Use a fraction as an operator to find fractions of numbers or quantities • Understand percentage as the number of parts in every 100 Find simple % of whole number quantities **This needs to be modified to include the new objectives - highlighted below** **NRICH links** **Year 5** Solve problems involving number up to three decimal places NRICH: **Route Product** ** NRICH: **Forgot the Numbers** ** **Year 6** Solve problems involving the calculation of percentages [for	**Unit 2** **Calculations** • Consolidate all mental calculation strategies from previous years • **+ - X÷ - consolidate written calculations (include column + / - involving decimals, include ÷ (long – 4 digit by 2) involving remainders as whole numbers, fractions, decimals or by rounding** • Use knowledge of the order of operations to carry out calculations involving operations • Problem solving using + - X÷ - • Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy **Need to modify this plan to ensure you cover the new objectives – this plan mentions calculators which now are not used - L6** Please note that + - written procedures are all now in Year 5 – but being a mixed year group you need to cover **NRICH links** **Year 5** Solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why NRICH: **Twenty Divided Into Six** ** NRICH: **Reach 100** *** NRICH: **Two and Two** *** NRICH: **Journeys in Numberland** *	**Unit 3** **Shape and space** • Read and plot coordinates in all 4 quadrants – **INCLUDE USE OF NEGATIVE NUMBERS** • Use a protractor to measure and draw angles **and draw 2D shapes given dimensions and angles** • **Recognise where angles meet at a point, are on a straight line, or are vertically opposite, and find missing angles** • **Find unknown angles in triangles** • Classify quadrilaterals and regular polygons • **Recognise describe and build simple 3D shapes including making nets** • **Draw and translate simple shapes on the coordinate plane and reflect them in the axes** **NRICH links** **Year 6** Draw 2-D shapes using given dimensions and angles NRICH: **Making Spirals** *** Recognise, describe and build simple 3-D shapes, including making nets NRICH: **Cut Nets** ** NRICH: **Making Cuboids** ** Compare and classify geometric shapes based on their properties and sizes and find unknown angles in any triangles, quadrilaterals, and regular polygons NRICH: **Where Are They?** * NRICH: **Quadrilaterals** *** NRICH: **Round a Hexagon** * Describe positions on the full coordinate grid (all four quadrants)	**Unit 4** **Problem solving 1** • Interpret and **construct pie charts** and line graphs and use these to solve problems • Calculate and interpret mean as an average • Median / mode and range (extend to this) • **Interpret conversion graphs KM to miles etc.** • **Identify and use appropriate operations (including combinations of operations to solve word problems involving numbers and quantities – based on real life or money, using one or more steps** **This plan needs changing – probability is no longer in the KS2 curriculum – so has been removed – but children need to be able to construct pie charts so this needs adding as does conversion graphs** **NRICH links** **Year 6** Interpret and construct pie charts and line graphs and use these to solve problems NRICH: **Match the Matches** ** Calculate and interpret the mean as an average NRICH: **Birdwatch** * NRICH: **Probably …** * NRICH: **Odds or Sixes?** * NRICH: **Same or Different?** ** NRICH: **Tricky Track** ** NRICH: **Winning the Lottery** **	**Unit 5** **Problem solving 2** • Identify and use appropriate operations +- ÷x – to solve word problems based on real life – including conversions / % • Solve problems involving ratio and proportion • Know equivalents of Miles and Km • Express missing number problems algebraically eg the cost of n articles @15p • Solve mathematical problems or puzzles, recognise and explain patterns and relationships **NRICH links** **Year 6** Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts NRICH: **Orange Drink** ** NRICH: **Pumpkin Pie Problem** ** NRICH: **Jumping** *	**Unit 6** **Division, decimals and problem solving** **Need to reduce this to 4 lessons and have one assess and review lesson –** **need to modify the plan to ensure the highlighted objectives are covered** • Solve a problem by extracting and interpreting information presented in tables **and pie charts** • **Identify the value of each digit in numbers given to 3 decimal places and multiply and divide by 10, 100 and 100 giving answers up to 3 decimal places** **NRICH links** **Year 6** Interpret and construct pie charts and line graphs and use these to solve problems NRICH: **Match the Matches** ** **Assess and review / Key Assessment opportunities** **Plan minimum of 1 lessons this week – to assess and review progress of the 5 weeks numeracy completed – Feed this into your APP**

example, of measures, and such as 15% of 360] and the use of percentages for comparison **NRICH:** Would you Rather? *		**NRICH:** Cops and Robbers * **NRICH:** Eight Hidden Squares ** **NRICH:** Coordinate Tan ** **NRICH:** Ten Hidden Squares *** YEAR 5 Draw given angles, and measure them in degrees (°) **NRICH:** The Numbers Give the Design * **NRICH:** Six Places to Visit * **NRICH:** How Safe Are You? * **NRICH:** Olympic Turns 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 **NRICH:** Transformations on a Pegboard * **NRICH:** Square Corners ** **NRICH:** More Transformations on a Pegboard		**Use to support with your planning** • **Pitch and expectations** • **Securing L4 /5/6** • **Key Assessments** **Opportunity tasks and questions** • **Test base** • **Assess and review lessons**

Notes and guidance (non-statutory) – number and place value	Notes and guidance (non-statutory) Addition and subtraction
Year 5 • **Pupils identify the place value in large whole numbers.** • **They continue to use number in context, including measurement. Pupils extend and apply their understanding of the number system to the decimal numbers and fractions that they have met so far.** • **They should recognise and describe linear number sequences, including those involving fractions and decimals, and find the term-to-term rule.** • **They should recognise and describe linear number sequences (for example, 3, 3 1/2 , 4, 4 1/4 …), including those involving fractions and decimals, and find the term-to-term rule in words (for example, add 1/2).** **Year 6** • **Pupils use the whole number system, including saying, reading and writing numbers accurately.**	**Year 5** • **Pupils practise using the formal written methods of columnar addition and subtraction with increasingly large numbers to aid fluency (see Mathematics Appendix 1).** • **They practise mental calculations with increasingly large numbers to aid fluency (for example 12462-2300=10162** **Year 6** • **Pupils practise addition, subtraction, multiplication and division for larger numbers, using the formal written methods of columnar addition and subtraction, short and long multiplication, and short and long division (see Mathematics Appendix 1).** • **They undertake mental calculations with increasingly large numbers and more complex calculations.** • **Pupils continue to use all the multiplication tables to calculate mathematical statements in order to maintain their fluency.** • **Pupils round answers to a specified degree of accuracy, for example, to the nearest 10, 20, 50 etc., but not to a specified number of significant figures.** • **Pupils explore the order of operations using brackets; for example, 2 + 1 x 3 = 5 and (2 + 1) x 3 = 9.** • **Common factors can be related to finding equivalent fractions**

Notes and guidance (non-statutory) – multiplication and division	Notes and guidance (non-statutory) –Measurement
Year 5 • Pupils practise and extend their use of the formal written methods of short multiplication and short division (see Mathematics Appendix 1). They apply all the multiplication tables and related division facts frequently, commit them to memory and use them confidently to make larger calculations. • They use and understand the terms factor, multiple and prime, square and cube numbers. • Pupils interpret non-integer answers to division by expressing results in different ways according to the context, including with remainders, as fractions, as decimals or by rounding (for example,	Year 5 • **Pupils use their knowledge of place value and multiplication and division to convert between standard units.** • **Pupils calculate the perimeter of rectangles and related composite shapes, including using the relations of perimeter or area to find unknown lengths. Missing measures questions such as these can be expressed algebraically, for example 4 + 2b = 20 for a rectangle of sides 2 cm and b cm and perimeter of 20cm.** • **Pupils calculate the area from scale drawings using given measurements.** • **Pupils use all four operations in problems involving time and money, including conversions (for example, days to weeks, expressing the answer as weeks and days).**

98 ÷ 4 = = 24 r 2 = 24 = 24.5 ≈ 25).
- Pupils use multiplication and division as inverses to support the introduction of ratio in year 6, for example, by multiplying and dividing by powers of 10 in scale drawings or by multiplying and dividing by powers of a 1000 in converting between units such as kilometres and metres.
- Distributivity can be expressed as a(b + c) = ab + ac.
- They understand the terms factor, multiple and prime, square and cube numbers and use them to construct equivalence statements (for example, 4 x 35 = 2 x 2 x 35; 3 x 270 = 3 x 3 x 9 x 10 = 92 x 10).
- Pupils use and explain the equals sign to indicate equivalence, including in missing number problems (for example, 13 + 24 = 12 + 25; 33 = 5 x □).

Year 6
- **Pupils practise addition, subtraction, multiplication and division for larger numbers, using the formal written methods of columnar addition and subtraction, short and long multiplication, and short and long division (see Mathematics Appendix 1).**
- **They undertake mental calculations with increasingly large numbers and more complex calculations.**
- **Pupils continue to use all the multiplication tables to calculate mathematical statements in order to maintain their fluency.**
- **Pupils round answers to a specified degree of accuracy, for example, to the nearest 10, 20, 50 etc., but not to a specified number of significant figures.**
- **Pupils explore the order of operations using brackets; for example, 2 + 1 x 3 = 5 and (2 + 1) x 3 = 9.**
- **Common factors can be related to finding equivalent fractions**

Year 6
- **Pupils connect conversion (for example, from kilometres to miles) to a graphical representation as preparation for understanding linear/proportional graphs.**
- **They know approximate conversions and are able to tell if an answer is sensible.**
- **Using the number line, pupils use, add and subtract positive and negative integers for measures such as temperature.**
- **Algebra**
- **Measurement**
- **They relate the area of rectangles to parallelograms and triangles, for example, by dissection, and calculate their areas, understanding and using the formulae (in words or symbols) to do this.**
- **Pupils could be introduced to compound units for speed, such as miles per hour, and apply their knowledge in science or other subjects as appropriate**

Notes and guidance (non-statutory) fractions percentages and decimals
Year 5
- **Pupils should be taught throughout that percentages, decimals and fractions are different ways of expressing proportions.**
- **They extend their knowledge of fractions to thousandths and connect to decimals and measures.**
- **Pupils connect equivalent fractions > 1 that simplify to integers with division and other fractions > 1 to division with remainders, using the number line and other models, and hence move from these to improper and mixed fractions.**
- **Pupils connect multiplication by a fraction to using fractions as operators (fractions of), and to division, building on work from previous years. This relates to scaling by simple**
- **Number – fractions (including decimals and percentages)**
- **fractions, including fractions > 1.**
- **Pupils practise adding and subtracting fractions to become fluent through a variety of increasingly complex problems. They extend their understanding of adding and subtracting fractions to calculations that exceed 1 as a mixed number.**
- **Pupils continue to practise counting forwards and backwards in simple fractions.**
- **Pupils continue to develop their understanding of fractions as numbers, measures and operators by finding fractions of numbers and quantities.**
- **Pupils extend counting from year 4, using decimals and fractions including bridging zero, for example on a number line.**
- **Pupils say, read and write decimal fractions and related tenths, hundredths and thousandths accurately and are confident in checking the reasonableness of their answers to problems.**
- **They mentally add and subtract tenths, and one-digit whole numbers and tenths.**

Notes and guidance (non-statutory) – Properties of shape
Year 5
- **Pupils become accurate in drawing lines with a ruler to the nearest millimetre, and measuring with a protractor. They use conventional markings for parallel lines and right angles.**
- **Pupils use the term diagonal and make conjectures about the angles formed between sides, and between diagonals and parallel sides, and other properties of quadrilaterals, for example using dynamic geometry ICT tools.**
- **Pupils use angle sum facts and other properties to make deductions about missing angles and relate these to missing number problems.**

Year 6
- **Pupils draw shapes and nets accurately, using measuring tools and conventional markings and labels for lines and angles.**
- **Pupils describe the properties of shapes and explain how unknown angles and lengths can be derived from known measurements.**
- **These relationships might be expressed algebraically for example, $d = 2 \times r$; $a = 180 - (b + c)$.**

Notes and guidance (non-statutory) Ratio and proportion
Year 6

- They practise adding and subtracting decimals, including a mix of whole numbers and decimals, decimals with different numbers of decimal places, and complements of 1 (for example, 0.83 + 0.17 = 1).
- Pupils should go beyond the measurement and money models of decimals, for example, by solving puzzles involving decimals.
- Pupils should make connections between percentages, fractions and decimals (for example, 100% represents a whole quantity and 1% is 1/100 , 50% 50 /100 is , 25% 25 /100is) and relate this to finding 'fractions of'.

Year 6

- Pupils should practise, use and understand the addition and subtraction of fractions with different denominators by identifying equivalent fractions with the same denominator. They should start with fractions where the denominator of one fraction is a multiple of the other (for example, + =) and progress to varied and increasingly complex problems.
- Pupils should use a variety of images to support their understanding of multiplication with fractions. This follows earlier work about fractions as operators (fractions of), as numbers, and as equal parts of objects, for example as parts of a rectangle.
- Pupils use their understanding of the relationship between unit fractions and division to work backwards by multiplying a quantity that represents a unit fraction to find the whole quantity (for example, if of a length is 36cm, then the whole length is 36 × 4 = 144cm).
- They practise calculations with simple fractions and decimal fraction equivalents to aid fluency, including listing equivalent fractions to identify fractions with common denominators.
- Pupils can explore and make conjectures about converting a simple fraction to a decimal fraction (for example, 3 ÷ 8 = 0.375). For simple fractions with recurring decimal equivalents, pupils learn about rounding the decimal to three decimal places, or other appropriate approximations depending on the context. Pupils multiply and divide numbers with up to two decimal places by one-digit and two-digit whole numbers. Pupils multiply decimals by whole numbers, starting with the simplest cases, such as 0.4 × 2 = 0.8, and in practical contexts, such as measures and money.
- Pupils are introduced to the division of decimal numbers by one-digit whole number, initially, in practical contexts involving measures and money. They recognise division calculations as the inverse of multiplication.
- Pupils also develop their skills of rounding and estimating as a means of predicting and checking the order of magnitude of their answers to decimal calculations. This includes rounding answers to a specified degree of accuracy and checking the reasonableness of their answers.

- Pupils recognise proportionality in contexts when the relations between quantities are in the same ratio (for example, similar shapes and recipes).
- Pupils link percentages or 360° to calculating angles of pie charts.
- Pupils should consolidate their understanding of ratio when comparing quantities, sizes and scale drawings by solving a variety of problems. They might use the notation $a{:}b$ to record their work.
- Pupils solve problems involving unequal quantities, for example, 'for every egg you need three spoonful's of flour', ' of the class are boys'. These problems are the foundation for later formal approaches to ratio and proportion.

Notes and guidance (non-statutory) Algebra

- Pupils should be introduced to the use of symbols and letters to represent variables and unknowns in mathematical situations that they already understand, such as:
- missing numbers, lengths, coordinates and angles
- formulae in mathematics and science
- equivalent expressions (for example, $a + b = b + a$)
- generalisations of number patterns
- number puzzles (for example, what two numbers can add up to).

Notes and guidance (non-statutory) position and direction

Year 5
Pupils recognise and use reflection and translation in a variety of diagrams, including continuing to use a 2-D grid and coordinates in the first quadrant. Reflection should be in lines that are parallel to the axes.

Year 6
- Pupils draw and label a pair of axes in all four quadrants with equal scaling. This extends their knowledge of one quadrant to all four quadrants, including the use of negative numbers.
- Pupils draw and label rectangles (including squares), parallelograms and rhombuses,
- Geometry – position and direction

Notes and guidance (non-statutory) Statistics

Year 5
Pupils connect their work on coordinates and scales to their interpretation of time graphs.
They begin to decide which representations of data are most appropriate and why.

Year 6
Pupils connect their work on angles, fractions and percentages to the interpretation of pie charts.
Pupils both encounter and draw graphs relating two variables, arising from their own enquiry and in other subjects.
They should connect conversion from kilometres to miles in measurement to its graphical representation.
Pupils know when it is appropriate to find the mean of a data set.

- **Geometry – properties of shapes**

- **Specified by coordinates in the four quadrants, predicting missing coordinates using the properties of shapes. These might be expressed algebraically for example, translating vertex (a, b) to (a − 2, b + 3); (a, b) and (a + d, b + d) being opposite vertices of a square of side d.**