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| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Term** | **Week 1** | **Week 2** | **Week 3** | **Week 4** | **Week 5** | **Week 6** | **Week 7** | **Week 8** |  | **Week 1** | **Week 2** | **Week 3** | **Week 4** | **Week 5** | **Week 6** | **Week 7** | **Week 8** | **Week 9** |
| **Autumn 1 – 8 Weeks** | **Autumn 2 – 9 Weeks** |
|  | **Pixl Paper Testing Window (Paper 1)** |  | **Start of** | **Pixl Y2 Testing Window (2018 Paper)** | **Y2 QLA Deadline** | **Y2 IFT Reports** |  |
|  |  | **Pixl Y3-5 Testing Window** |  |  |
|  | **Y6 QLA Deadline** | **Y6 IFT Reports** |  | **Y3-5 QLA Deadline** | **Y3-5 IFT Reports** | **Pixl Y6 Testing Window (2017 Paper)** | **Y6 QLA Deadline** | **Y6 IFT Reports** |  |
| **Autumn** | **Number: Place Value****3 Weeks****Small Steps: 11****NCETM Spine:** [**1.26**](https://www.ncetm.org.uk/resources/52480)[**1.27**](https://www.ncetm.org.uk/resources/52609) **(negative numbers)** | **Number: Addition & Subtraction** **2 Weeks****Small Steps: 9****NCETM Spine:revisit** [**1.22**](https://www.ncetm.org.uk/resources/52479) **(TP 3 and TP5) and** [**1.20**](https://www.ncetm.org.uk/resources/52401)**,** [**1.21**](https://www.ncetm.org.uk/resources/52402) **for written methods.**[**1.29**](https://www.ncetm.org.uk/resources/52611) **(strategies and mental methods as opposed to written. Includes decimals)**[**1.29**](https://www.ncetm.org.uk/resources/52611) **(TP 3 difference)**[**1.29**](https://www.ncetm.org.uk/resources/52611) **(TP 6 estimate, approximate, inverse)**[**1.28**](https://www.ncetm.org.uk/resources/52610) **(multi-step problems)** | **Statistics****2 Weeks** **Small Steps: 9****NCETM Spine: some examples in** [**1.28**](https://www.ncetm.org.uk/resources/52610) **and** [**1.29**](https://www.ncetm.org.uk/resources/52611) | **Consolidation/****Assessment** | **Number: Multiplication & Division** **3 Weeks****Small Steps: 13****NCETM Spine:** [**2.21**](https://www.ncetm.org.uk/resources/53659) **(factors multiples prime)**[**2.9**](https://www.ncetm.org.uk/resources/53132) **(square numbers)**[**2.13**](https://www.ncetm.org.uk/resources/53537) **(mult divide 10,100,100)**[**2.19**](https://www.ncetm.org.uk/resources/53657) **(10,100,1000)**[**2.20**](https://www.ncetm.org.uk/resources/53658) **(cube numbers)**[**2.18**](https://www.ncetm.org.uk/resources/53571) **(maybe stand alone as equivalence)** | **Measurement: Length & Perimeter****2 Weeks** **Small Steps: 9****NCETM Spine: revisit** [**2.16**](https://www.ncetm.org.uk/resources/53569) | **Number: Multiplication & Division****3 Weeks****Small Steps: 12****NCETM Spine:** [**2.23**](https://www.ncetm.org.uk/resources/53671) **(area model)**[**2.15**](https://www.ncetm.org.uk/resources/53539) **(division)**[**2.14**](https://www.ncetm.org.uk/resources/53538) **(written multiplication)** | **Consolidation/****Assessment** |
| **Spring 1 – 6 Weeks** |  |  | **Spring 2 – 7 Weeks** |
|  | **Pixl Y1 Testing Window**  | **Y1 QLA Deadline** | **Y1 IFT Reports** |  |
|  | **Pixl Y3-5 Testing Window** |  | **Pixl Y2 Testing Window (2019 Paper)****Pixl Y6 Testing Window (2019 Paper)** | **Y2 & Y6 QLA Deadline** | **Y2 & Y6 IFT Reports** |  |
|  | **Pixl Y6 Testing Window (2018 Paper)** | **Y6 QLA Deadline** | **Y6 IFT Reports** | **Pixl Y3-5 Testing Window** | **Y3-5 QLA Deadline** | **Y3-5 IFT Reports** |  |
| **Spring** | **Number: Fractions**  **6 weeks****Small Steps: 24****NCETM Spine: revisit parts of earlier fractions to prepare for topic (**[**3.1**](https://www.ncetm.org.uk/resources/53333)**,** [**3.2**](https://www.ncetm.org.uk/resources/53334)**,** [**3.3**](https://www.ncetm.org.uk/resources/53429)**,** [**3.4**](https://www.ncetm.org.uk/resources/53430)**)**[**3.7**](https://www.ncetm.org.uk/resources/53651) **(equivalents and simplifying, compare order),** [**3.8**](https://www.ncetm.org.uk/resources/53652) **(add and subtract),** [**3.5**](https://www.ncetm.org.uk/resources/53649) **improper and mixed,** [**3.6**](https://www.ncetm.org.uk/resources/53650) **multiplying** | **Consolidation/****Assessment** |  | **Number: Fractions**  **6 weeks****Small Steps: 24** | **Number: Decimals and Percentages** **2 Weeks****Small Steps: 10****NCETM Spine: continue from y4** [**1.23**](https://www.ncetm.org.uk/resources/52566) **and** [**1.24**](https://www.ncetm.org.uk/resources/52567) **(1/10, 1/100, 1/000ths)**[**1.24**](https://www.ncetm.org.uk/resources/52567) **(TP 3 compare and order)**[**3.10**](https://www.ncetm.org.uk/resources/53654) **FDP (TP1,TP2,TP4, TP5)** | **Number: Decimals** **3 Weeks** **Small Steps: 12****NCETM Spine: ref back to** [**1.23**](https://www.ncetm.org.uk/resources/52566) **TP 4 -6** [**1.24**](https://www.ncetm.org.uk/resources/52567) **(TP 4 & 6)**[**2.19**](https://www.ncetm.org.uk/resources/53657)**TP 2 and** [**2.29**](https://www.ncetm.org.uk/resources/53677) **(decimals by 10,100,1000)** | **Consolidation/****Assessment** |  |
|  **Summer 1 – 5 Weeks** |  |  | **Summer 2 – 5 Weeks** |
|  | **Pixl Y1 Testing Window** |  | **Pixl Y1 Testing Window** | **Y1 QLA Deadline** | **Y1 IFT Reports** |  |
|  | **Pixl Y3-5 Testing Window** |  | **Pixl Y3-5 Testing Window** | **Y3-5 QLA Deadline** | **Y3-5 IFT Reports** |
| **Summer** | **Number: Decimals** **3 Weeks** **Small Steps: 12****NCETM Spine: ref back to** [**1.23**](https://www.ncetm.org.uk/resources/52566) **TP 4 -6** [**1.24**](https://www.ncetm.org.uk/resources/52567) **(TP 4 & 6)**[**2.19**](https://www.ncetm.org.uk/resources/53657)**TP 2 and** [**2.29**](https://www.ncetm.org.uk/resources/53677) **(decimals by 10,100,1000)** | **Geometry: Properties of Shape****3 Weeks** **Small Steps: 13****NCETM Spine: N/A** | **Consolidation & Problem Solving** |  | **Geometry: Position & Direction****2 Weeks****Small Steps: 9****NCETM Spine: N/A** | **Measurement: Covering Units****2 Weeks** **Small Steps: 7****NCETM Spine: (**[**1.24**](https://www.ncetm.org.uk/resources/52567) **TP5)** | **Measurement: Volume****1 Week****Small Steps: 4****NCETM Spine:** [**2.20**](https://www.ncetm.org.uk/resources/53658) | **Consolidation/****Assessment** |

YEAR 5 – KS2 Mathematics Curriculum Map 2021-22

**Year 5 National Curriculum Objectives, White Rose Small Steps & NCTEM Spine Teaching Points**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Autumn** | **Number: Place Value – 3 Weeks** | **Number: Addition & Subtraction – 2 Weeks** | **Statistics – 2 Weeks** | **Number: Multiplication & Division –** **3 Weeks** | **Measurement: Length & Perimeter – 2 Weeks** | **Number: Multiplication & Division –** **3 Weeks** |
| **National Curriculum Objectives** | * + - * 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
 | * add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)
* add and subtract numbers mentally with increasingly large numbers
* 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
 | * solve comparison, sum and difference problems using information presented in a line graph
* complete, read and interpret information in tables, including timetables
 | * 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
* multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000
* 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
 | * 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
* 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]
* solve problems involving converting between units of time
* use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling
 | * 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
* multiply and divide whole numbers and those involving decimals by 10, 100 and 1,000
* 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
 |
| **White Rose Small steps** | * 1000s, 100s, 10s and 1s
* Numbers to 10,000
* Rounding to the nearest 10
* Rounding to the nearest 100
* Round to the nearest 10, 100 and 1,000
* Numbers to 100.000
* Numbers to a million
* Counting in 10s, 100s, 1,000s, 10,000s and 100,000s
* Compare and order numbers to one million
* Negative numbers
* Roman Numerals to 1,000
 | * Add two 4-digit numbers – one exchange
* Add two 4-digit numbers – one exchange
* Add whole numbers with more than 4 digits (column method)
* Subtract two 4-digit numbers – one exchange
* Subtract two 4-digit numbers – more than one exchange
* Subtract whole numbers with more than 4-digits (column method)
* Round to estimate and approximate
* Inverse operations (addition and subtraction)
* Multi-step addition and subtraction problems
 | * Interpret charts
* Comparison, sum and difference
* Introduce line graphs
* Read and interpret line graphs
* Draw line graphs
* Use line graphs to solve problems
* Read and interpret tables
* Two-way tables
* Times-tables
 | * Multiples
* Factors
* Common factors
* Prime numbers
* Square numbers
* Cube numbers
* Multiply by 10
* Multiply by 100
* Multiply by 10, 100 and 1,000
* Divide by 10
* Divide by 100
* Divide by 10, 100 and 1,000
* Multiples of 10, 100 and 1,000
 | * Measure perimeter
* Perimeter on a grid
* Perimeter of rectangles
* Perimeter of rectilinear shapes
* Calculate perimeter
* Counting squares
* Area of rectangles
* Area of compound shapes
* Area of irregular shapes
 | * Multiply 2-digits by 1-digit
* Multiply3-digits by 1-digit
* Multiply4-digits by 1-digit
* Multiply2-digits (area model)
* Multiply2-digits by 2-digits
* Multiply3-digits by 2-digits
* Multiply4-digits by 2-digits
* Divide 2-digits by 1-digit (1)
* Divide 2-digits by 1-digit (2)
* Divide 3-digits by 1-digit (1)
* Divide 4-digits by 1-digit (1)
* Divide with remainders
 |
| **NCTEM Spine Teaching Points** | **1.26 – Composition and Calculation: Multiples of 1,000 up to 1,000,000**Explore the composition of six-digit, whole-thousand numbers, using the partitioning structure; apply knowledge and strategies from segments 1.17 and 1.18 combined with unitising in 1,000s, as well as column methods and rounding.**1.27- Negative numbers: Counting, comparing and calculating**Introduce children to negative numbers, making links to everyday contexts; explore addition and subtraction below zero and across zero.  | **1.22 – Composition and Calculation: 1,000 and 4-digit numbers** Explore the composition of 1,000 and four-digit numbers, using the partitioning structure, and make links to measures; introduce children to calculation across thousands boundaries, and extend column algorithms and rounding to four-digit numbers.**1.20 – Algorithms: Column addition**Introduce children to the column algorithm for addition calculations, applying the algorithm to a variety of aggregation and augmentation contexts for two-digit and three-digit numbers; explore regrouping (column total is ten or greater) in detail.**1.21- Algorithms: Column subtraction** Introduce children to the column algorithm for subtraction calculations, applying the algorithm to a variety of partitioning, reduction and difference contexts for two-digit and three-digit numbers; explore exchange (insufficient quantity to subtract from in a column) in detail.**1.29 – Using Equivalence and the Compensation Property to Calculate**Explore the effect on the sum of changing the value of one or both addends; explore the effect on the difference of changing the value of the minuend, the subtrahend or both. Apply knowledge of compensation properties and inverse operations to calculate and balance equations.**1.28 – Composition and Calculation: Numbers up to 10,000,000**Building on segment 1.26, explore six-digit numbers that are not whole thousands, and then extend to seven-digit numbers; apply additive facts and strategies, including column algorithms, and rounding to these numbers. | **1.28 – Composition and calculation: Numbers up to 10,000,000**Building on segment 1.26, explore six-digit numbers that are not whole thousands, and then extend to seven-digit numbers; apply additive facts and strategies, including column algorithms, and rounding to these numbers.**1.29 – Using equivalence and the compensation property to calculate**Explore the effect on the sum of changing the value of one or both addends; explore the effect on the difference of changing the value of the minuend, the subtrahend or both. Apply knowledge of compensation properties and inverse operations to calculate and balance equations. | **2.21 – Factors, multiples, prime numbers and composite numbers** Identify properties of factors and multiples including square and prime numbers, composite numbers, common and prime factors, and common multiples. Use factor pairs to solve problems efficiently.**2.9 – Times-tables: 7 and patterns within/across times-tables** Build up the seven times table and solve associated multiplication and division problems; explore times table patterns including generalising about the product in terms of odd/even factors, reviewing divisibility rules, and exploring square numbers.**2.12- Division with remainders**Explore how some quantities can be split into equal groups with a remainder, and express this using mathematical notation; practise interpreting the meaning of the remainder in different contexts. **2.19 – Calculation: x/÷ decimal factions by whole numbers**Develop strategies for multiplying and dividing decimal fractions by whole numbers, including combining known facts with unitising, multiplying and dividing by 10 and 100, and using adjusting strategies.**2.20 – Multiplication with three factors and volume** Use multiplication to calculate the volume of cuboids and shapes comprised of several cuboids; use division to solve associated inverse problems. Use associativity and commutativity to solve abstract multiplication problems with three factors.**2.18 – Using equivalence to calculate** Develop efficiency in calculation by using equivalence, through adjusting the factors (in multiplication) and the dividend and divisor (in division). | **2.16 – Multiplicative contexts: Area and perimeter** Use addition and multiplication to solve problems about the perimeter of irregular and regular 2D shapes, and to find the area of rectilinear and composite rectilinear shapes; use division to solve associated inverse problems. | **2.23 – Multiplication strategies for larger numbers and long multiplication** Develop strategies for multiplying two numbers with two or more digits, including adjusting strategies when multiplying by a power of ten, partitioning followed by multiplication and addition of partial products, and long multiplication.**2.15 – Division: Partitioning leading to short division** Introduce the short division algorithm, using it to divide two-/three-digit numbers by single-digit numbers; explore exchange where necessary.**2.14 – Multiplication: Partitioning leading to short multiplication** Introduce the short multiplication algorithm, using it to multiply two-/three-digit numbers by single-digit numbers; explore regrouping where necessary. |
| **Spring** | **Number: Fractions – 6 Weeks** | **Number: Decimals & Percentages – 2 Weeks** | **Number: Decimals – 3 Weeks** |
| **National Curriculum Objectives** | * 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 = 1 1/5]
* 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
 | * 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
 | * 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
 |
| **White Rose Small steps** | * What is a fraction?
* Equivalent fractions (1)
* Equivalent fractions
* Fractions greater than 1
* Improper fractions to mixed numbers
* Mixed numbers to improper fractions
* Number sequences
* Compare and order fractions less than 1
* Compare and order fractions greater than 1
* Add and subtract fractions
* Add fractions within 1
* Add 3 or more fractions
* Add fractions
* Add mixed numbers
* Subtract fractions
* Subtract mixed fractions
* Subtract – breaking the whole
* Subtract 2 mixed numbers
* Multiply unit fractions by an integer
* Multiply non-unit fractions by an integer
* Multiply mixed numbers by integers
* Calculate fractions of a quantity
* Fractions of an amount
* Using fractions as operators
 | * Decimals up to 2 d.p.
* Decimals as fractions (1)
* Decimals as fractions (2)
* Understand thousandths
* Thousandths as decimals
* Rounding decimals
* Order and compare decimals
* Understand percentages
* Percentages as fractions and decimals
* Equivalent F.D.P
 | * Adding decimals within 1
* Subtracting decimals within 1
* Complements to 1
* Adding decimals – crossing the whole
* Adding decimals with the same numbers of decimal places
* Subtracting decimals with the same numbers of decimal places
* Adding decimals with a different number of decimal places
* Subtracting decimals with a different number of decimal places
* Adding and subtracting wholes and decimals
* Decimal sequences
* Multiplying decimals by 10, 100 and 1,000
* Dividing decimals by 10, 100 and 1,000
 |
| **NCTEM Spine Teaching Points** | **Revisit 3.1, 3.2, 3.3, 3.4** **3.7 – Finding equivalent fractions and simplifying fractions**Discover how equivalent fractions have the same proportional relationship between the numerator and denominator, and therefore have the same numerical value. Convert between equivalent fractions and simplify fractions.**3.8 – Common denomination: More adding and subtracting** **Learn to add and subtract fractions with different denominators by first finding a common denominator. Compare fractions using a range of methods, including converting to a common denominator.** **3.5 – Working across one whole: Improper fractions and mixed numbers**Meet mixed numbers and improper fractions, and learn to convert between them; compare, order and place them on a number line. Extend addition and subtraction from within a whole to numbers greater than one whole.**3.6 – Multiplying whole numbers and fractions** Consider multiplication of whole numbers and proper fractions as both repeated addition and scaling. Understand that multiplication of a whole number by a proper fraction results in a smaller number. | **1.23 – Composition and calculation: 1,000 and 4-digit numbers** Explore the composition of 1,000 and four-digit numbers, using the partitioning structure, and make links to measures; introduce children to calculation across thousands boundaries, and extend column algorithms and rounding to four-digit numbers.**1.24 – Composition and calculation: Hundredths and thousandths** Building on segment 1.23, introduce children to hundredths (and thousandths) using both the partitioning structure and ideas of place value; apply additive facts and strategies, including column algorithms, and rounding to numbers with hundredths (and thousandths).**3.10 – Linking fractions, decimals and percentages** Make connections between fractions and previous work on decimals. Learn common fraction and decimal equivalences. Understand that percentages tell us about the proportion being considered. Find percentages of quantities. | **1.23 – Composition and calculation: 1,000 and 4-digit numbers** Explore the composition of 1,000 and four-digit numbers, using the partitioning structure, and make links to measures; introduce children to calculation across thousands boundaries, and extend column algorithms and rounding to four-digit numbers.**1.24 – Composition and calculation: Hundredths and thousandths** Building on segment 1.23, introduce children to hundredths (and thousandths) using both the partitioning structure and ideas of place value; apply additive facts and strategies, including column algorithms, and rounding to numbers with hundredths (and thousandths).**2.19 – Calculation: x/÷ decimal fractions by whole numbers** Develop strategies for multiplying and dividing decimal fractions by whole numbers, including combining known facts with unitising, multiplying and dividing by 10 and 100, and using adjusting strategies.**2.29 – Decimal place value knowledge, multiplication and division** Develop efficient calculation strategies, and connect knowledge of multiplying and dividing by 10/100/1,000 to understanding of place value, including application to conversion between metric units of measure. |
| **Summer** | **Number: Decimals – 1 Week****(Continued from Spring 2)** | **Geometry: Properties of Shape – 3 Weeks** | **Geometry: Position & Direction – 2 Weeks** | **Measurement: Covering Units – 2 Weeks** | **Measurement: Volume – 1 Week** |
| **National Curriculum Objectives** | * 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
 | * 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
 | * 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
 | * 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
* 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]
* solve problems involving converting between units of time
* use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling
 | * 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
* 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]
* solve problems involving converting between units of time
* use all four operations to solve problems involving measure [for example, length, mass, volume, money] using decimal notation, including scaling
 |
| **White Rose Small steps** | * Adding decimals within 1
* Subtracting decimals within 1
* Complements to 1
* Adding decimals – crossing the whole
* Adding decimals with the same numbers of decimal places
* Subtracting decimals with the same numbers of decimal places
* Adding decimals with a different number of decimal places
* Subtracting decimals with a different number of decimal places
* Adding and subtracting wholes and decimals
* Decimal sequences
* Multiplying decimals by 10, 100 and 1,000
* Dividing decimals by 10, 100 and 1,000
 | * Identify angles
* Compare and order angles
* Measure angles in degrees
* Measuring with a protractor (1)
* Measuring with a protractor (2)
* Drawing lines and angles accurately
* Calculating angles on a straight line
* Calculating angles around a point
* Triangles
* Quadrilaterals
* Calculating lengths and angles in shapes
* Regular and irregular polygons
* Reasoning about 3-D shapes
 | * Describe position
* Draw on a grid
* Position in the first quadrant
* Translation
* Translation with coordinates
* Lines of symmetry
* Complete a symmetric figure
* Reflection
* Reflection with coordinates
 | * Kilometres
* Kilograms and kilometres
* Millimetres and millilitres
* Metric units
* Imperial units
* Converting units of time
* Timetables
 | * What is volume?
* Compare volume
* Estimate volume
* Estimate capacity
 |
| **NCTEM Spine Teaching Points** | **1.23 – Composition and calculation: 1,000 and 4-digit numbers** Explore the composition of 1,000 and four-digit numbers, using the partitioning structure, and make links to measures; introduce children to calculation across thousands boundaries, and extend column algorithms and rounding to four-digit numbers.**1.24 – Composition and calculation: Hundredths and thousandths** Building on segment 1.23, introduce children to hundredths (and thousandths) using both the partitioning structure and ideas of place value; apply additive facts and strategies, including column algorithms, and rounding to numbers with hundredths (and thousandths).**2.19 – Calculation: x/÷ decimal fractions by whole numbers** Develop strategies for multiplying and dividing decimal fractions by whole numbers, including combining known facts with unitising, multiplying and dividing by 10 and 100, and using adjusting strategies.**2.29 – Decimal place value knowledge, multiplication and division** Develop efficient calculation strategies, and connect knowledge of multiplying and dividing by 10/100/1,000 to understanding of place value, including application to conversion between metric units of measure. | **N/A** | **1.27- Negative numbers: Counting, comparing and calculating**Introduce children to negative numbers, making links to everyday contexts; explore addition and subtraction below zero and across zero. | **1.24 – Composition and calculation: Hundredths and thousandths** Building on segment 1.23, introduce children to hundredths (and thousandths) using both the partitioning structure and ideas of place value; apply additive facts and strategies, including column algorithms, and rounding to numbers with hundredths (and thousandths). | **2.20 – Multiplication with three factors and volume** Use multiplication to calculate the volume of cuboids and shapes comprised of several cuboids; use division to solve associated inverse problems. Use associativity and commutativity to solve abstract multiplication problems with three factors. |