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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**  **4 Weeks**  **Small Steps: 17**  **NCETM Spine:** [**1.17**](https://www.ncetm.org.uk/resources/52219) **(count in 25s),** [**1.22**](https://www.ncetm.org.uk/resources/52479)**,**  [**1.27**](https://www.ncetm.org.uk/resources/52609) **(negative numbers)** | | | | | | | **Number: Addition & Subtraction**  **3 Weeks**  **Small Steps: 13**  **NCETM Spine:** [**1.22**](https://www.ncetm.org.uk/resources/52479) **(TP 3 add sub 1s,10s,100s,1000s and TP5). Refer back to** [**1.20**](https://www.ncetm.org.uk/resources/52401) **and** [**1.21**](https://www.ncetm.org.uk/resources/52402) **for introducing written methods.** | | | **Consolidation/**  **Assessment** | **Measurement: Length & Perimeter**  **2 Weeks**  **Small Steps: 9**  **NCETM Spine:** [**2.16**](https://www.ncetm.org.uk/resources/53569) | | | | **Number: Multiplication & Division**  **3 Weeks**  **Small Steps: 14**  **NCETM Spine:** [**2.6**](https://www.ncetm.org.uk/resources/52991) **(TP5 for x ÷ 0 and 1),** [**2.8**](https://www.ncetm.org.uk/resources/53131) **(6x and 9x),** [**2.9**](https://www.ncetm.org.uk/resources/53132) **(7x),** [**2.13**](https://www.ncetm.org.uk/resources/53537) **(x ÷ 10,** | | | | | | **Number: Multiplication & Division**  **3 Weeks**  **Small Steps: 14**  **NCETM Spine:** [**2.10**](https://www.ncetm.org.uk/resources/53249) **(factor pairs),**  [**2.11**](https://www.ncetm.org.uk/resources/53250) **(11x, 12x & efficient mult),**  [**2.14**](https://www.ncetm.org.uk/resources/53538)**,** [**2.15**](https://www.ncetm.org.uk/resources/53539) | | | | | **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** | **Measurement:**  **Area**  **1 Week**  **Small Steps: 4**  **NCETM Spine:** [**2.16**](https://www.ncetm.org.uk/resources/53569) | **Number: Factions**  **4weeks**  **Small Steps: 17**  **NCETM Spine: May need to visit** [**3.0**](https://www.ncetm.org.uk/resources/53655) **(KS1 fractions) & Year 3 for intro.**  [**3.4**](https://www.ncetm.org.uk/resources/53430) **(add and sub fractions)** [**3.7**](https://www.ncetm.org.uk/resources/53651) **(equiv - TP1 & TP2),**  [**3.5**](https://www.ncetm.org.uk/resources/53649) **(be selective - show more than one whole in fractions, count on & back past 1, add & sub)** | | | | | | | **Consolidation/**  **Assessment** |  | **Number: Decimals**  **3 weeks**  **Small Steps: 10**  **NCETM Spine:**  **(Revisit** [**2.13**](https://www.ncetm.org.uk/resources/53537) **for ÷ 10 and 100),**  [**1.23**](https://www.ncetm.org.uk/resources/52566) **(tenths, hundredths),** [**1.24**](https://www.ncetm.org.uk/resources/52567) **(mainly TP 1 and some of TP2)** | | | | | | | | **Number: Decimals**  **2weeks**  **Small Steps: 7**  **NCETM Spine:** [**1.24**](https://www.ncetm.org.uk/resources/52567) **(TP2, TP7)** | | | **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** | **Measurement: Money**  **2 Weeks**  **Small Steps: 8**  **NCETM Spine:** [**1.22**](https://www.ncetm.org.uk/resources/52479) **(TP 4 estimate money)** [**1.25**](https://www.ncetm.org.uk/resources/52568) | | | **Measurement: Time**  **2 Weeks**  **Small Steps: 8**  **NCETM Spine: N/A** | | | **Consolidation & Problem Solving** | |  | | | **Statistics**  **1 Week**  **Small Steps: 4**  **NCETM Spine: N/A** | **Geometry: Properties of Shape**  **2 Weeks**  **Small Steps: 11**  **NCETM Spine: N/A** | | | | | **Geometry: Position & Direction**  **2 Weeks**  **Small Steps: 4**  **NCETM Spine:** [**1.27**](https://www.ncetm.org.uk/resources/52609) **TP 6** | | | **Consolidation/**  **Assessment** |

YEAR 4 – KS2 Mathematics Curriculum Map 2021-22

**Year 4 National Curriculum Objectives, White Rose Small Steps & NCTEM Spine Teaching Points**

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Autumn** | **Number: Place Value – 4 Weeks** | **Number: Addition & Subtraction - 3 Weeks** | | | **Measurement: Length & Perimeter –**  **2 Weeks** | |  | **Number: Multiplication & Division –**  **3 Weeks** | | **Number: Multiplication & Division –**  **3 Weeks** | |
| **National Curriculum Objectives** | * + - * 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 | * 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 | | | * 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 | | * 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 | | | * 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 | |
| **White Rose Small steps** | * Represent numbers to 1,000 * 1000s, 10s and 1s * Number line to 1,000 * Round to the nearest 10 * Round to the nearest 100 * Count in 1,000s * 1000s, 100s, 10s and 1s * Partitioning * Number line to 10,000 * Find 1, 10, 100 more or less * 1,000 more or less * Compare numbers * Order numbers * Round to the nearest 1,000 * Count in 25s * Negative Numbers * Roman numerals to 100 | * Add and subtract 1s, 10s, 100s and 1,000s * Add two 3-digit numbers – not crossing 10 or 100 * Add two 4-digit numbers – no exchange * Add two 3-digit numbers – crossing 10 or 100 * Add two 4-digit numbers – more than one exchange * Subtract a 3-digit number from a 3-digit number – no exchange * Subtract two 4-digit numbers – no exchange * Subtract a 3-digit number from a 3-digit number – exchange * Subtract two 4-digit numbers – one exchange * Subtract two 4-digit numbers – more than one exchange * Efficient subtraction * Estimate answers * Checking answers | | | * Equivalent lengths – m and cm * Equivalent lengths – mm and cm * Kilometres * Add lengths * Subtract lengths * Measure perimeter * Perimeter on a grid * Perimeter on a rectangle * Perimeter of rectilinear shapes | | * Multiply by 10 * Multiply by 100 * Divide by 10 * Divide by 100 * Multiply by 1 and 0 * Divide by 1 and itself * Multiply and divide by 3 * The 3 times-table * Multiply and divide by 6 * 6 times-table and division facts * Multiply and divide by 9 * 9 times-table and division facts * Multiply and divide by 7 * 7 times table and division facts | | | * 11 and 12 times-table * Multiply 3 numbers * Factor pairs * Efficient multiplication * Written methods * Multiply 2-digits by 1-digit (1) * Multiply 2-digits by 1-digit * Multiply 3-digits by 1-digit * Divide 2-digits by 1-digit (1) * Divide 2-digits by 1-digit (1) * Divide 2-digits by 1-digit (2) * Divide 2-digits by 1-digit (2) * Divide 3-digits by 1-digit * Correspondence problems | |
| **NCTEM Spine Teaching Points** | **1.17 – Composition and calculation: 100 and bridging 100**  Equip children with a range of useful strategies for addition within ten, including adding and subtracting zero and one, commutativity, adding and subtracting two to/from odd and even numbers, and doubling and halving.  **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.  **1.27 – 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 subtraction**  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. | | | **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. | | **2.6 – Structures Quotitive and partitive division**  Introduce the quotitive and partitive structures of division; skip count using the divisor, or use known multiplication facts, to find the quotient; generalise about the quotient when dividend = 0, dividend = divisor, or divisor = 1.  **2.8 – Times tables: 3, 6 and 9**  Build up the three/six/nine times table; using different structures/interpretations of multiplication and division, solve problems related to these tables; explore connections between the three, six and nine times tables.  **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.  **2.13 – Calculation: multiplying and dividing by 10 or 100**  Use place-value knowledge to develop strategies for multiplying/dividing by 10 and 100. Generalise about the product or quotient when a factor or the dividend is made 10 or 100 times bigger/smaller. | | | **2.10 – Connecting multiplication and division, and the distributive law**  Explore why multiplication is commutative while division is not. Build on understanding of the difference between adjacent multiples to explore the distributive law, and apply it to derive multiplication facts.  **2.11 – Time-tables: 11 and 12**  Build up the eleven and twelve times tables using the distributive law, and solve associated multiplication and division problems. Combine known six times table facts with doubling facts and strategies to multiply by twelve.  **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.  **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. | |
| **Spring** | **Measurement: Area – 1 Week** | | **Number: Fractions – 4 Weeks** | | | **Number: Decimals – 3 Weeks** | | | **Number: Decimals – 2 Weeks** | | |
| **National Curriculum Objectives** | * 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 | | * 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 , , * 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 | | | * count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit numbers or quantities by 10 * recognise, find and write fractions of a discrete set of objects: unit fractions and non-unit fractions with small denominators * recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators * recognise and show, using diagrams, equivalent fractions with small denominators * add and subtract fractions with the same denominator within one whole [for example, 5/7 + 1/7 = 6/7 ] * compare and order unit fractions, and fractions with the same denominators * solve problems that involve all of the above | | | * 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 | | |
| **White Rose Small steps** | * What is area? * Counting squares * Making shapes * Comparing area | | * Unit and non-unit fractions * What is a fraction? * Tenths * Count in tenths * Equivalent fractions (1) * Equivalent fractions (2) * Fractions greater than 1 * Count in fractions * Add fractions * Add 2 or more fractions * Subtract fractions * Subtract 2 fractions * Subtract from whole amounts * Fractions of a set of objects (1) * Fractions of a set of objects (2) * Calculate fractions of a quantity * Problem solving – calculate quantities | | | * Recognise tenths and hundredths * Tenths as decimals * Tenths on a place value grid * Tenths on a number line * Divide 1-digit by 10 * Divide 2-digits by 10 * Hundredths * Hundredths as decimals * Hundredths on a place value grid * Divide 1 or 2-digits by 100 | | | * Bonds to 100 and 100 * Make a whole * Write decimals * Compare decimals * Order decimals * Round decimals * Halves and quarters | | |
| **NCTEM Spine Teaching Points** | **2.16 – Multiplicative contexts: area and perimeter**  Introduce the short division algorithm, using it to divide two-/three-digit numbers by single-digit numbers; explore exchange where necessary. | | **3.0 – Guidance on the teaching of fractions in KS1**  **3.4 – Adding and subtracting within one whole**  Learn to name and write unit fractions. Recognise and show unit fractions of areas, lengths and quantities. Relate numerators and denominators to parts and wholes; explore how the greater the denominators, the smaller the unit fraction.  **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.  **3.5 – 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. | | | **2.13 – Calculation: multiplying and dividing by 10 or 100**  Use place-value knowledge to develop strategies for multiplying/dividing by 10 and 100. Generalise about the product or quotient when a factor or the dividend is made 10 or 100 times bigger/smaller.  **1.23 – Composition and calculation: tenths**  Introduce children to tenths using both the partitioning structure and ideas of place value; apply additive facts and strategies, including column algorithms, and rounding to numbers with tenths.  **1.24 – Composition and calculation: hundredths and thousands**  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). | | | **1.24 – Composition and calculation: hundredths and thousands**  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). | | |
| **Summer** | **Measurement: Money – 2 Weeks** | | **Measurement: Time – 2 Weeks** | **Statistics – 1 Week** | | | | **Geometry: Properties of Shape – 2 Weeks** | | | **Geometry: Position & Directions – 2 Weeks** |
| **National Curriculum Objectives** | * convert between different units of measure [for example, kilometre to metre; hour to minute] * estimate, compare and calculate different measures, including money in pounds and pence | | * convert between different units of measure [for example, kilometre to metre; hour to minute] * 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 | * 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 | | | | * 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 | | | * 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 |
| **White Rose Small steps** | * Pounds and pence * Ordering money * Estimating money * Convert pounds and pence * Add money * Subtract money * Find change * Four operations | | * Telling the time to 5 minutes * Telling the time to the minute * Using AM and PM * 24-hour clock * Hours, minutes and seconds * Years, months, weeks and days * Analogue to digital – 12 hour * Analogue to digital – 24 hour | * Interpret charts * Comparison, sum and difference * Introducing line graphs * Line graphs | | | | * Turns and angles * Right angles in shapes * Identify angles * Compare and order angles * Recognise and describe 2-D shapes * Triangles * Quadrilaterals * Horizontal and vertical * Lines of symmetry * Complete a symmetric figure | | | * Describe position * Draw on a grid * Move on a grid * Describe movement on a grid |
| **NCTEM Spine Teaching Points** | **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.  **1.25 – Addition and subtraction: money**  Building on segments 1.23 and 1.24, introduce children to conventions for expressing monetary value and explore the equivalence of 100 p and £1; encourage children to select column algorithms or equivalent calculations where most appropriate. | | **N/A** |  | | | | **N/A** | | | **1.27 – Negative numbers: Counting, comparing and calculating**  Negative numbers are used in coordinate and graphing contexts. |