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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****2 Weeks****Small Steps: 4****NCETM Spine: revisit y5** [**1.26**](https://www.ncetm.org.uk/resources/52480)**PV**[**1.30**](https://www.ncetm.org.uk/resources/52481) **(mainly TP2 and TP3)**[**1.30**](https://www.ncetm.org.uk/resources/52481) **(TP 5 rounding)** | **Number: Addition, Subtraction, Multiplication & Division****4.5 Weeks****Small Steps: 15****NCETM Spine:** [**1.30**](https://www.ncetm.org.uk/resources/52481)**TP 4****(revisit** [**1.20**](https://www.ncetm.org.uk/resources/52401) **and** [**1.21**](https://www.ncetm.org.uk/resources/52402) **for column)** [**1.30**](https://www.ncetm.org.uk/resources/52481) **(maybe use to secure PV and counting through boundaries using mental methods TP4 and fluency including RPS in TP6)**[**2.24**](https://www.ncetm.org.uk/resources/53672) **(division - ref back to** [**2.15**](https://www.ncetm.org.uk/resources/53539) **if necessary)**[**2.23**](https://www.ncetm.org.uk/resources/53671) **long multiplication**[**2.21**](https://www.ncetm.org.uk/resources/53659) **common factors, common multiples, primes**[**2.20**](https://www.ncetm.org.uk/resources/53658) **cubes and ref back to** [**2.9**](https://www.ncetm.org.uk/resources/53132) **for square numbers**[**2.22**](https://www.ncetm.org.uk/resources/53670) **and** [**2.28**](https://www.ncetm.org.uk/resources/53676) **(order operations)**[**2.25**](https://www.ncetm.org.uk/resources/53673) **(reason known facts)** | **Consolidation/****Assessment** | **Number: Fractions****4.5 Weeks****Small Steps: 16****NCETM Spine:** [**3.7**](https://www.ncetm.org.uk/resources/53651) **simplify equivalent incl. number line****revisit** [**3.5**](https://www.ncetm.org.uk/resources/53649) **mixed number improper fraction add, sub, number line**[**3.8**](https://www.ncetm.org.uk/resources/53652) **add and sub fractions**[**3.8**](https://www.ncetm.org.uk/resources/53652) **TP 5 (compare denom. and numerator)**[**3.9**](https://www.ncetm.org.uk/resources/53653) **Multiply, divide** [**3.9**](https://www.ncetm.org.uk/resources/53653) **fractions of amounts TP1 - revisit 3.6 TP 3** | **Geometry: Position & Direction****1 Week****Small Steps: 4****NCETM Spine:** [**1.27**](https://www.ncetm.org.uk/resources/52609) **TP 6** | **Number: Decimals** **2 Weeks****Number: Decimals****Small Steps: 9****NCETM Spine: revisit TP** [**1.24**](https://www.ncetm.org.uk/resources/52567) **for three decimal places****revisit** [**2.29**](https://www.ncetm.org.uk/resources/53677) **- multi div 10,100,1000**[**2.19**](https://www.ncetm.org.uk/resources/53657) **mult div decimals by integers**[**2.28**](https://www.ncetm.org.uk/resources/53676) **(some support with division problems but no decimals)**[**3.10**](https://www.ncetm.org.uk/resources/53654) **fraction decimal** | **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: Percentages** **2 Weeks****Small Steps: 6****NCETM Spine:** [**3.10**](https://www.ncetm.org.uk/resources/53654) | **Number: Algebra** **2 Weeks****Small Steps: 10****NCETM Spine:** [**1.28**](https://www.ncetm.org.uk/resources/52610)**,** [**1.31**](https://www.ncetm.org.uk/resources/52612) | **Measurement: Covering Units** **1 Week****Small Steps: 5****NCETM Spine:** [**2.29**](https://www.ncetm.org.uk/resources/53677) **TP2 (metric only)** | **Consolidation/****Assessment** |  | **Measurement: Perimeter, Area & Volume****2 Weeks****Small Steps: 8****NCETM Spine:** [**2.30**](https://www.ncetm.org.uk/resources/53678) **area perimeter (revisit** [**2.16**](https://www.ncetm.org.uk/resources/53569)**)**[**2.20**](https://www.ncetm.org.uk/resources/53658) **volume** | **Number: Ratio****2 weeks****Small Steps: 7****NCETM Spine:** [**2.27**](https://www.ncetm.org.uk/resources/53675) | **Statistics****1 Week****Small Steps: 8****NCETM Spine:** [**1.28**](https://www.ncetm.org.uk/resources/52610) **TP3 (pie chart, bar chart - missing values focus)**[**3.10**](https://www.ncetm.org.uk/resources/53654) **TP6 - percentage context**[**2.26**](https://www.ncetm.org.uk/resources/53674) **mean average** | **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** | **Geometry: Properties of Shape****3 Weeks** **Small Steps: 11****NCETM Spine**: [**1.28**](https://www.ncetm.org.uk/resources/52610) **TP4 (missing angles only)** | **Consolidation & SATs Prep** |  | **Consolidation, investigations and preparations for KS3** |

YEAR 6 – KS2 Mathematics Curriculum Map 2021-22

**Year 6 National Curriculum Objectives, White Rose Small Steps & NCTEM Spine Teaching Points**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Autumn** | **Number: Place Value – 2 Weeks** | **Number: Addition, Subtraction, Multiplication & Division – 4.5 Weeks** | **Number: Fractions – 4.5 Weeks** | **Geometry: Position & Direction – 1 Week** | **Number: Decimals - 2 Weeks** |
| **National Curriculum Objectives** | * read, write, order and compare numbers up to 10,000,000 and determine the value of each digit
* round any whole number to a required degree of accuracy
* use negative numbers in context, and calculate intervals across 0
* solve number and practical problems that involve all of the above
 | * multiply multi-digit numbers up to 4 digits by a two-digit whole number using the formal written method of long multiplication
* divide numbers up to 4 digits by a two-digit whole number using the formal written method of long division, and interpret remainders as whole number remainders, fractions, or by rounding, as appropriate for the context
* divide numbers up to 4 digits by a two-digit number using the formal written method of short division where appropriate, interpreting remainders according to the context
* perform mental calculations, including with mixed operations and large numbers
* identify common factors, common multiples and prime numbers
* use their knowledge of the order of operations to carry out calculations involving the 4 operations
* solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why
* solve problems involving addition, subtraction, multiplication and division
* use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy
 | * use common factors to simplify fractions; use common multiples to express fractions in the same denomination
* compare and order fractions, including fractions >1
* add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions
* multiply simple pairs of proper fractions, writing the answer in its simplest form [for example, 1/4 × 1/2 = 1/8 ]
* divide proper fractions by whole numbers [for example, 1/3 ÷ 2 = 1/6 ]
* associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, 3/8 ]
* identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places
* multiply one-digit numbers with up to 2 decimal places by whole numbers
* use written division methods in cases where the answer has up to 2 decimal places
* solve problems which require answers to be rounded to specified degrees of accuracy
* recall and use equivalences between simple fractions, decimals and percentages, including in different contexts
 | * describe positions on the full coordinate grid (all 4 quadrants)
* draw and translate simple shapes on the coordinate plane, and reflect them in the axes
 | * associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375] for a simple fraction [for example, ]
* identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places
* multiply one-digit numbers with up to 2 decimal places by whole numbers
* use written division methods in cases where the answer has up to 2 decimal places
* solve problems which require answers to be rounded to specified degrees of accuracy

recall and use equivalences between simple fractions, decimals and percentages, including in different contexts |
| **White Rose Small steps** | * Numbers to 10, 000
* Numbers to 100,000
* Numbers to a million
* Numbers to ten million
* Compare and order any number
* Round numbers to 10, 100 and 1,000
* Round any number
* Negative numbers
 | * Add whole numbers with more than 4 digits
* Subtract whole numbers with more than 4-digits
* Inverse operations (addition and subtraction)
* Multi-step addition and subtraction problems
* Add and subtract integers
* Multiply 4-digits by 1-digit
* Multiply 2-digits (area model)
* Multiply 2-digits by 2-digits
* Multiply 3-digits by 2-digits
* Multiply up to a 4-digit number by 2-digit number
* Divide 4-digits by 1-digit
* Divide with remainders
* Short division
* Division using factors
* Long division (1)
* Long division (2)
* Long division (3)
* Long division (4)
* Factors
* Common factors
* Common multiples
* Primes to 100
* Squares and cubes
* Order of operations
* Mental calculations and estimation
* Reason from known facts Long division (1)
 | * Equivalent fractions
* Simplify fractions
* Improper fractions to mixed numbers
* Mixed numbers to improper fractions
* Fractions on a number line
* Compare and order (denominator)
* Compare and order (numerator)
* Add and subtract fractions (1)
* Add and subtract fractions (2)
* Add mixed numbers
* Subtract mixed numbers
* Subtract fractions
* Mixed addition and subtraction
* Multiply fractions by integers
* Multiply fractions by fractions
* Divide fractions by integers (1)
* Divide fractions by integers (2)
* Four rules with fractions
* Fraction of an amount
* Fraction of an amount – find the whole
 | * The first quadrant
* Four quadrants
* Translations
* Reflections
 | * Decimals up to 2 decimal places
* Understand thousandths
* Three decimal places
* Multiply by 10, 100 and 1,000
* Divide by 10, 100 and 1,000
* Multiply decimals by integers
* Divide decimals by integers
* Division to solve problems
* Decimals as fractions
* Fractions to decimals (1)
* Fractions to decimals (2)
 |
| **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.**1.30 – 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. | **1.30 – 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.**Revisit 1.20 & 1.21 for Column addition****2.24 – Division: Dividing by 2-digit divisors** Learn to divide by two-digit divisors, recording calculations using either the short or long division algorithm. Represent remainders in an appropriate way, according to the context, including using the short or long division algorithm to express remainders as decimal fractions.**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.**2.21 – 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.**2.20 – 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.**2.22 – Combining multiplication with addition and subtraction** Learn to combine multiplication with addition or subtraction. Learn to use brackets to change the order of operations. Build on knowledge of the distributive law.**2.28 – Combining division with addition and subtraction** Learn to combine division with addition or subtraction. Revisit the use of brackets to change the order of operations. Build on knowledge of the distributive law.**2.25 – using compensation to calculate** Learn how multiplication and division calculations are affected when one element of the calculation is multiplied or divided by a scale factor. | **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.**3.9 – Multiplying fractions and dividing fractions by a whole number** Explore how to multiply two fractions. Learn how to divide a fraction by a whole number by first converting to an equivalent multiplication. Review how multiplying by a proper fraction makes a number smaller. | **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).**2.29 – 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.**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.**2.28 – Combining division with addition and subtraction** Learn to combine division with addition or subtraction. Revisit the use of brackets to change the order of operations. Build on knowledge of the distributive law.**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. |
| **Spring** | **Number: Percentages – 2 Weeks** | **Number: Algebra – 2 Weeks** | **Measurement: Covering Units – 1 Week** | **Measurement: Perimeter, Area and Volume – 2 Weeks** | **Number: Ratio – 2 Weeks**  | **Statistics – 1 Week** |
| **National Curriculum Objectives** | * identify the value of each digit in numbers given to 3 decimal places and multiply and divide numbers by 10, 100 and 1,000 giving answers up to 3 decimal places
* multiply one-digit numbers with up to 2 decimal places by whole numbers
* use written division methods in cases where the answer has up to 2 decimal places
* solve problems which require answers to be rounded to specified degrees of accuracy
* recall and use equivalences between simple fractions, decimals and percentages, including in different contexts
 | * use simple formulae
* generate and describe linear number sequences
* express missing number problems algebraically
* find pairs of numbers that satisfy an equation with 2 unknowns
* enumerate possibilities of combinations of 2 variables
 | * solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate
* use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to 3 decimal places
* convert between miles and kilometres
* recognise that shapes with the same areas can have different perimeters and vice versa
* recognise when it is possible to use formulae for area and volume of shapes
* calculate the area of parallelograms and triangles
* calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³]
 | * solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate
* use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to 3 decimal places
* convert between miles and kilometres
* recognise that shapes with the same areas can have different perimeters and vice versa
* recognise when it is possible to use formulae for area and volume of shapes
* calculate the area of parallelograms and triangles
* calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³]
 | * solve problems involving the relative sizes of 2 quantities where missing values can be found by using integer multiplication and division facts
* solve problems involving the calculation of percentages [for example, of measures and such as 15% of 360] and the use of percentages for comparison
* solve problems involving similar shapes where the scale factor is known or can be found
* solve problems involving unequal sharing and grouping using knowledge of fractions and multiples
 | * interpret and construct pie charts and line graphs and use these to solve problems
* calculate and interpret the mean as an average
 |
| **White Rose Small steps** | * Understand percentages
* Fractions to percentages
* Equivalent FDP
* Order FDP
* Percentage of an amount (1)
* Percentage of an amount (2)
* Percentages – missing values
 | * Find a rule – one step
* Find a rule – two step
* Forming expressions
* Substitution
* Formulae
* Forming equations
* Solve simple one-step equations
* Solve two-step equations
* Find pairs of values
* Enumerate possibilities
 | * Metric measures
* Convert metric measures
* Miles and kilometres
* Imperial measures
 | * Shapes – same area
* Area and perimeter
* Area of a triangle (1)
* Area of a triangle (2)
* Area of a triangle (3)
* Area of a parallelogram
* What is volume?
* Volume – counting cubes
* Volume of a cuboid
 | * Using ratio language
* Ratio and fractions
* Introducing the ratio symbol
* Calculating ratio
* Using scale factors
* Calculating scale factors
* Ratio and proportion problems
 | * Read and interpret line graphs
* Draw line graphs
* Use line graphs to solve problems
* Circles
* Read and interpret pie charts
* Pie charts with percentages
* Draw pie charts
* The mean
 |
| **NCTEM Spine Teaching Points** | **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. | **1.28 – 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.**1.31 – Problems with two unknowns** Equip children with strategies for solving problems with two unknowns, including using the bar model to represent relationships between known numbers, and working systematically. | **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. | **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.**2.30 – Multiplicative contexts: Area and perimeter 2**Build on earlier knowledge of area and perimeter. Learn to find the area of parallelograms and triangles by identifying the perpendicular height. Compare areas and perimeters and apply scale factors to side-length, perimeter and area.**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. | **2.27 – Scale factors, ratio and proportional reasoning** Use bar modelling and ratio grids to reason about multiplicative relationships between two or more cardinal quantities, and explore correspondence problems. Extend understanding of scaling measures to make and interpret maps and scale/compare the dimensions of similar shapes. | **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.**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.**2.26 – Mean average and equal shares** Understand the concept of mean average and learn how to find the mean of a set of data. Use the mean to compare sets of data and learn when it is appropriate to use the mean. |
| **Summer** | **Properties of Shape – 3 Weeks** | **SATs Prep – 1 Week** | **Consolidation, Investigations and preparations for KS3 – 5 Weeks** |
| **National Curriculum Objectives** | * solve problems involving the calculation and conversion of units of measure, using decimal notation up to 3 decimal places where appropriate
* use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of measure to a larger unit, and vice versa, using decimal notation to up to 3 decimal places
* convert between miles and kilometres
* recognise that shapes with the same areas can have different perimeters and vice versa
* recognise when it is possible to use formulae for area and volume of shapes
* calculate the area of parallelograms and triangles
* calculate, estimate and compare volume of cubes and cuboids using standard units, including cubic centimetres (cm³) and cubic metres (m³), and extending to other units [for example, mm³ and km³]
 |  |  |
| **White Rose Small steps** | * Measure with a protractor
* Draw lines and angles accurately
* Introduce angles
* Angles on a straight line
* Angles around a point
* Calculate angles
* Vertically opposite angles
* Angles in a triangle
* Angles in a triangle – special cases
* Angles in a triangle – missing angles
* Angles in special quadrilaterals
* Angles in regular polygons
* Draw shapes accurately
* Draw nets of 3-D shapes
 |  | * See WRM Projects to revisit the skills and curriculum content taught in Y6 and the rest of KS2
 |
| **NCTEM Spine Teaching Points** | **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. |  |  |