## Oral mental starters (ongoing, throughout the term):

- Count from (and back to) 0 in multiples of $3,4,6,7,8,9,11,12,25,50,100$ and 1000
- Recall and use multiplication and division facts for the $2,3,4,5,6,7,8,9,10,11$, 12 times tables (up to the $12^{\text {th }}$ multiple) (See Multiplication Tables Guidance, 2020)
- Find all factor pairs of a given number; find all common factors for a pair of numbers
- Multiply and divide numbers mentally using known facts and a range of strategies (See Mental calculation strategies, 2017)
- Multiply numbers with up to two decimal places by 10,100 and 1000 and divide corresponding numbers by 10 , by 100 and by 1000
- Subtract larger numbers mentally by finding the difference (small differences), e.g. $8,004-6999=1,005$ (consider empty number lines)
- Find doubles of numbers up to five digits (using knowledge of partitioning and place value) and find corresponding halves
- Count forwards and backwards with positive and negative whole numbers, including through zero; calculate intervals across zero (in context)
- Recognise, describe and extend linear number sequences, including those involving decimals, e.g. 0.7, 1.4, 2.1 ; find the term to term rule
- Compare and order fractions, decimals and percentages (using diagrams and resources to support)
- Name and write equivalent fractions of a given number, including tenths and hundredths (support understanding by using materials and diagrams)
- Recognise and use square numbers (up to $12 \times 12$ ) and the notation e.g. $9^{2}=81$
- Find percentages of whole number quantities using known fraction equivalences e.g. $10 \%$ of $£ 84 ; 20 \%$ of $80 ; 50 \%$ of $£ 248$
- Read and write Roman numerals to at least 1000 (M)
- Count forwards and backwards in steps of powers of $10(10,100,1000,10,000)$ from any given number

| Areas of Study | No of days | Statutory requirements and non-statutory guidance | Suggested Key Vocabulary |
| :---: | :---: | :---: | :---: |
| Number <br> Number and place value <br> Week 1 | 3-5 | Read and write numbers to at least one million; recognise $1,000,000$ as one million. Order and compare numbers within $1,000,000$ <br> Round numbers up to $1,000,000$ to the nearest 10, 100, 1000, 10,000 and 100,000 <br> Determine the place value of each digit in a six-digit number <br> Partition six-digit numbers into hundred thousands, ten thousands, thousands, hundreds, tens and ones/units; continue to use place value cards and charts to support, if necessary <br> Use knowledge of place value to solve number problems by adding and subtracting 10, 100, 1000, 10,000 to any number up to $1,000,000$ e.g. I am buying a new flat. It was for sale for $£ 335,000$ but the price has gone up by $£ 1,000$. How much does it cost now? Last year it was $£ 10,000$ cheaper. How much was it then? <br> Reason about numbers and place value e.g. a number rounded to the nearest 10,000 is 120,000 . What's the smallest number it could be? What's the largest number it could be? | Partition, Place Value Digit, number <br> Units/ones, tens, hundreds, thousands, ten thousands, hundred thousands, one million <br> Order <br> Compare <br> More than, Less than, <, > Round |

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Produced for Southwark Primary Schools by a working party led by Diane Andrews, maths consultant

\begin{tabular}{|c|c|c|c|}
\hline \begin{tabular}{l}
Number \\
Decimals/ place value \\
\& \\
Addition/ Subtraction \\
Week 2
\end{tabular} \& 2

3 \& \begin{tabular}{l}
Read and write numbers with up to three decimal places <br>
Order and compare numbers with up to three decimal places (including in the context of measures) <br>
Round decimal numbers with one or two decimal places to the nearest whole number <br>
Round decimal numbers with two decimal places to one decimal place <br>
Determine the place value of each digit in a decimal number with up to three decimal places Partition decimal numbers with up to three decimal places; use place value cards and charts to support, if necessary <br>
Consolidate using the formal written method of addition to add two four-digit or five-digit numbers and decimal numbers (with up to three-decimal places), including in the context of money and measures <br>
Consolidate the formal written method of subtraction to subtract two four-digit or five-digit numbers and decimal numbers (with up to three decimal places), including in the context of money and measures (See Written Calculation Policy, 2017) <br>
Solve addition and subtraction two-step and multi-step word problems (including money and measures problems, with up to 3 decimal places), deciding which operations to use; use rounding and inverse operations to estimate and check answers to calculations

 \& 

Partition, Place value Digit, number, decimal, tenth, hundredth, thousandths <br>
Order, compare More than, greater than, less than, <, > <br>
Round Inverse operations <br>
Addition <br>
Subtraction <br>
Estimate, check, inverse, round
\end{tabular} <br>

\hline | Measurement |
| :--- |
| Length, perimeter, area and volume |
| Week 3 | \& 5 \& | Convert between different metric units of length, using knowledge of place value, multiplication and division- consider as mental/oral activities |
| :--- |
| Estimate and measure length/height/width using appropriate units and equipment, including mixed units of measurement, and record using decimal notation, in practical contexts; measure and draw lines to the nearest mm |
| Follow a line of enquiry related to length e.g. |
| True or false? Your height is equal to $3 x$ the circumference of your head. How will you find out? |
| Consolidate understanding of perimeter and express the formula for finding the perimeter of a rectangle in words (and then letters); calculate the perimeter of rectilinear shapes and of composite rectilinear shapes; solve perimeter problems with missing measurements |
| Consolidate understanding of area and relate finding area to arrays and to multiplication |
| Find the area of rectangles using the formula in words (and then letters), using the notation for square centimetres ( $\mathrm{cm}^{2}$ ) and square metres ( $\mathrm{m}^{2}$ ); estimate the area of irregular shapes by counting squares Reason about area and perimeter e.g. draw a rectangle with an area of $36 \mathrm{~cm}^{2}$ and a perimeter of 26 cm . Can you find other rectangles with the same area? |
| Understand the term volume and the units cubic centimetres $\left(\mathrm{cm}^{3}\right)$; relate to cubes and cuboids Begin to estimate and calculate the volume of cubes and cuboids using standard units of $\mathrm{cm}^{3}$ (taken from Y6 Programmes of Study) | \& | Length, height, width, distance km, kilometre m , metre cm, centimetre mm , millimetre |
| :--- |
| Perimeter |
| Area |
| Square centimetres, $\mathrm{cm}^{2}$, square metres, $\mathrm{m}^{2}$ |
| Volume, cuboids Cubic centimetres, $\mathrm{cm}^{3}$ | <br>

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\end{tabular}

## Medium Term Plans for Mathematics (revised 2020) - Year Five (Summer Term)

\begin{tabular}{|c|c|c|c|}
\hline \begin{tabular}{l}
Geometry \\
Properties of Shape (2D \& 3D) \\
Week 4
\end{tabular} \& 3 \& \begin{tabular}{l}
Identify 3D shapes, including cubes and other cuboids, from 2D representations; describe the properties of 3D shapes using vocabulary from previous years; extend with 'pairs of parallel faces' \\
Distinguish between regular and irregular polygons based on reasoning about equal sides and angles \\
Identify all quadrilaterals and describe their properties, including regular/ irregular, symmetrical, pairs of parallel sides, types of angles; use conventional marking for parallel lines and right angles \\
Solve problems/ reason about shapes e.g. \\
Given the diagonals of a quadrilateral, draw the sides and identify the shape \\
What's the same about a trapezium and a parallelogram? What's different about them? \\
A cuboid is a prism. True or false? Convince me! \\
Measure given angles to the nearest degree using a protractor \\
Know that angles on a straight line and half a turn total \(180^{\circ}\); know that angles at a point and a whole turn total \(360^{\circ}\); use this knowledge to find missing angles on a line and at a point
\end{tabular} \& \begin{tabular}{l}
Relevant vocabulary from previous terms/ years including all quadrilaterals, polygons, regular, irregular, parallel, pairs of parallel faces/sides \\
Degrees \(\left({ }^{\circ}\right)\) \\
Protractor
\end{tabular} \\
\hline Number
Multiplication

Week 5 \& 5 \& \begin{tabular}{l}
Recognise and use square numbers up to $12 \times 12$ and the notation for squared number ( ${ }^{2}$ ) Introduce cube numbers and the notation e.g. $2^{3}=2 \times 2 \times 2=8$; relate to volume and $\mathrm{cm}^{3}$ <br>
Consolidate the formal written method of short multiplication to multiply a two-digit number, a three digit-number or a four- digit number by a single digit number (See Written Calculation Policy, 2017) <br>
Consolidate the formal written method of long multiplication to multiply a two-digit number by a twodigit number; extend with multiplication of a three digit number by a two-digit number <br>
(See Written Calculation Policy, 2017) <br>
Solve word problems, which involve short and long multiplication e.g. <br>
How many hours are there in 8 weeks? <br>
There are 245 paper clips in a box. I buy 6 boxes. How many paper clips do I have? <br>
Tom is 15 years old today. How many months has he been alive? <br>
At the cinema there are 36 seats in a row and 28 rows. How many seats are there altogether? <br>
Notebooks cost $£ 4.75$ each. I buy 28 notebooks for my class. How much do I spend?

 \& 

Square numbers ( ${ }^{2}$ ) Cube numbers ( ${ }^{3}$ ) <br>
Multiply, multiplication, times, product Thousands, hundreds, tens, ones/units, digit <br>
Formal method of short multiplication <br>
Formal method of long multiplication
\end{tabular} <br>

\hline
\end{tabular}

| Number <br> Division <br> Week 6 | 5 | Know and apply tests of divisibility by 2, 3, 4, 5, 9, 10, 100 -consider as mental/oral starters Consolidate understanding of prime numbers; recall prime numbers up to 19; begin to establish whether a number up to 100 is prime, using knowledge of multiplication and division facts, factors and multiples; use the vocabulary of prime numbers, prime factors and introduce the term composite (non-prime) numbers <br> Use the formal method of short division to divide numbers with up to four- digits by a single digit number with whole number answers or with remainders, including expressing the remainder as a fraction (See Written Calculation Policy, 2017) <br> Solve word problems, which involve short division, with and without remainders; interpret remainders appropriately for the context e.g. <br> For every 7 tokens I collect I can get a free book. I collect 156 tokens. How many books can I get? (round down) <br> I collect 110 eggs from my hens. If I put them into boxes of six, how many boxes will I need? (round up) | Prime number, composite number, prime factor <br> Divide, division, divisor, dividend, quotient <br> Short division <br> Formal layout <br> Round up/down, remainder |
| :---: | :---: | :---: | :---: |
| Number <br> Fractions, decimals and percentages <br> Week 7 | 5 | Consolidate understanding of mixed numbers and improper fractions and convert from one form to the other <br> Identify equivalent fractions of a given fraction using knowledge of multiplication and factors <br> Find unit and non-unit fractions of whole number quantities e.g. $1 / 6$ of $420 ; 5 / 6$ of 72 ; relate to multiplication and division <br> Multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams e.g. $1 / 5 \times 3=3 / 5 ; 2 / 5 \times 4=8 / 5$ (the answer can also be expressed as a mixed number); <br> $11 / 4 \times 3=33 / 4 ; 23 / 4 \times 3=81 / 4$ <br> Solve problems and reason about fractions e.g. Would you rather have $5 / 6$ of $£ 42$ or $4 / 5$ of $£ 45$ ? <br> Know decimal and percentage equivalents of $1 / 2,1 / 4,3 / 4,1 / 5,2 / 5,4 / 5$ and those fractions with a denominator of a multiple of $10(1 / 10,2 / 10,3 / 10 \ldots)$ <br> Compare simple decimal, fraction and percentage equivalents, e.g. <br> Which is greater $25 \%$ or $1 / 5$ ? 0.8 or $3 / 4$ ? How do you know? Use materials and diagrams to support <br> Find percentages of whole number quantities using known fraction equivalences e.g. $10 \%$ of $45=4.5$; $20 \%$ of $80=16 ; 25 \%$ of $40=10 ; 50 \%$ of $£ 184=£ 92$ <br> Solve word problems which involve percentages e.g. There are 80 children in the playground. $20 \%$ of them are girls. How many girls and how many boys are there? | Whole Unit fraction, non-unit fraction Numerator, denominator <br> Equivalent fractions, mixed number, improper fraction <br> Decimal, percentage, \%, equivalence |
|  |  | Convert between 12 hour digital clocks and 24 hour digital clocks e.g. What time on the 12 hour clock | All relevant vocabulary from |

## Medium Term Plans for Mathematics (revised 2020) - Year Five (Summer Term)



| Multiplication and division (mental methods) <br> Week 10 | 5 | Multiply and divide numbers mentally using a range of strategies, drawing upon known facts, knowledge of place value, inverse operations, knowledge of factors and multiples e.g. <br> Use inverse operations, place value and the known fact $7 \times 8=56$ to calculate: $56 \div 8 ; 70 \times 8$; $560 \div 70 ; 0.8 \times 7 ; 80 \times 70 ; 560 \div 8 \ldots \ldots$ <br> Partition and use the distributive law to calculate $47 \times 5=(40 \times 5)+(7 \times 5)=200+35=235$ <br> Use partitioning to calculate $98 \div 7=(70+28) \div 7=10+4=14$ <br> (See Mental calculation Strategies, 2017) <br> Understand the meaning of the = sign to indicate equivalence, including missing number problems e.g. $54 \div 9=\square \div 7 ; 8 \times \square=4 \times 12$ <br> Consider the problem 'Adam's Apples' (See Mathematical challenges for all pupils, 2016) | Multiply, multiplication, product <br> Divide, division, divisor, dividend, quotient <br> Inverse operation <br> Partition <br> Equivalence, equivalent <br> Problem, solution |
| :---: | :---: | :---: | :---: |
| Number <br> Addition and subtraction (mental methods) | 5 | Add/subtract larger numbers and decimals mentally, using jottings (such as empty number lines) where necessary, for example: <br> - Use partitioning and jottings to add two numbers together e.g. 8,465 + 3,328 <br> - Find sums and differences of decimals using an empty number line e.g. $8.5+2.8 ; 17.8-1.4$ <br> - Add 999 by adding 1,000 and adjusting; subtract 999 by subtracting 1,000 and adjusting <br> - Find a small difference between near multiples of 1,000 by counting on using an empty number line e.g. 8,006-6,997 (See Mental Calculation Strategies, 2017) | Addition, total, sum Subtraction, difference |
|  <br> Problem solving (all operations) <br> Week 11 |  | Solve two-step or multi-step word problem involving addition, subtraction, multiplication and division; use mental methods with jottings or formal written methods; decide which operations and methods to use; use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy e.g. <br> I moved into my house in April 1998. How many years have I lived in this house? What will the year be when I have lived there for 25 years? <br> There are 7,546 people at the theme park. 998 more people arrive. How many are there now? What if 1,001 people leave- how many will be left in the theme park? <br> I buy a punnet of strawberries that cost $£ 2.99$ and a tray of peaches that cost $£ 3.99$. How much do I spend? How much change do I get from a ten pound note? <br> I buy three trays of peaches and two punnets of strawberries. How much change will I get from £20? How many trays of peaches could I buy with £30? How much change would I get? <br> Consider the problem 'Peter's Primes'(See Mathematical challenges for all pupils, 2016) | Calculate, calculation Operation, method |
| Measurement |  | Solve problems involving length, mass, capacity, e.g. <br> A bottle of salad dressing holds 399 ml . A tablespoon holds 15 ml . How many tablespoons of dressing | Weight, mass, measure Kilograms, kg, grams, g |

## Medium Term Plans for Mathematics (revised 2020) - Year Five (Summer Term)



