# Sir John Offley CE VC Primary School 

'With God all things are possible.'
Maths progression Number


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| Year Two | * count in steps of 2, 3, and 5 from 0 , and in tens from any number, forward and backward <br> * recognise the place value of each digit in a two-digit number (tens, ones) <br> * identify, represent and estimate numbers using different representations, including the number line <br> * compare and order numbers from 0 up to 100 ; use and $=$ signs $\%$ read and write numbers to at least 100 in numerals and in words $\boldsymbol{*}$ use place value and number facts to solve problems. | * solve problems with addition and subtraction: <br> - using concrete objects and pictorial representations, including those involving numbers, quantities and measures <br> - applying their increasing knowledge of mental and written methods <br> * recall and use addition and subtraction facts to 20 fluently, and derive and use related facts up to 100 <br> \& add and subtract numbers using concrete objects, pictorial representations, and mentally, including: <br> - a two-digit number and ones <br> - a two-digit number and tens <br> - two two-digit numbers <br> - adding three one-digit numbers <br> - show that addition of two numbers can be done in any order (commutative) and subtraction of one number from another cannot <br> \& recognise and use the inverse relationship between addition and subtraction and use this to check calculations and solve missing number problems. | * recall and use multiplication and division facts for the 2,5 and 10 multiplication tables, including recognising odd and even numbers <br> \& calculate mathematical statements for multiplication and division within the multiplication tables and write them using the multiplication $(x)$, division ( $\div$ ) and equals (=) signs <br> * show that multiplication of two numbers can be done in any order (commutative) and division of one number by another cannot <br> \& solve problems involving multiplication and division, using materials, arrays, repeated addition, mental methods, and multiplication and division facts, including problems in contexts. | * recognise, find, name and write fractions $31,41,42$ and 43 of a length, shape, set of objects or quantity <br> * write simple fractions for example, 2 1 of $6=3$ and recognise the equivalence of 42 and 21 . |
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| Year Three | *count from 0 in multiples of 4, 8, 50 and 100 ; find 10 or 100 more or less than a given number <br> * recognise the place value of each digit in a three-digit number (hundreds, tens, ones) <br> - compare and order numbers up to 1000 <br> - identify, represent and estimate numbers using different representations <br> * read and write numbers up to 1000 in numerals and in words <br> - solve number problems and practical problems involving these ideas | * add and subtract numbers mentally, including: <br> - a three-digit number and ones a three-digit number and tens <br> - a three-digit number and hundreds <br> \& add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction <br> * estimate the answer to a calculation and use inverse operations to check answers <br> * solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. | *recall and use multiplication and division facts for the 3, 4 and 8 multiplication tables <br> * write and calculate mathematical statements for multiplication and division using the multiplication tables that they know, including for two-digit numbers times one-digit numbers, using mental and progressing to formal written methods <br> * solve problems, including missing number problems, involving multiplication and division, including positive integer scaling problems and correspondence problems in which $n$ objects are connected to m objects. | * 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 <br> * recognise, find and write fractions of a discrete set of objects: unit fractions and nonunit fractions with small denominators <br> * recognise and use fractions as numbers: unit fractions and non-unit fractions with small denominators <br> * recognise and show, using diagrams, equivalent fractions with small denominators <br> * add and subtract fractions with the same denominator within one whole [for example, $75+71=76$ ] <br> * compare and order unit fractions, and fractions with the same denominators <br> \& solve problems that involve all of the above. |
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| Year Four | Number and Place value | Addition and Subtraction | Multiplication and Division | Fractions including decimals |
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|  | * count in multiples of 6, 7, 9, 25 and <br> 1000 <br> * find 1000 more or less than a given number <br> * count backwards through zero to include negative numbers <br> \& recognise the place value of each digit in a four-digit number (thousands, hundreds, tens, and ones) <br> \& order and compare numbers beyond 1000 <br> * identify, represent and estimate numbers using different representations $\because$ round any number to the nearest 10 , 100 or 1000 <br> \& 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 zero 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 <br> \& solve addition and subtraction twostep problems in contexts, deciding which operations and methods to use and why. | \&recall multiplication and division facts for multiplication tables up to 12 $\times 12$ <br> * use place value, known and derived facts to multiply and divide mentally, including: multiplying by 0 and 1 ; dividing by 1 ; multiplying together three numbers <br> * recognise and use factor pairs and commutativity in mental calculations <br> \& multiply two-digit and three-digit numbers by a one-digit number using formal written layout <br> * solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to mobjects. | * recognise and show, using diagrams, families of common equivalent fractions <br> \& count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. <br> * 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 <br> \& add and subtract fractions with the same denominator <br> \& recognise and write decimal equivalents of any number of tenths or hundredths <br> * recognise and write decimal equivalents to 41,21,43 <br> \& 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 <br> * round decimals with one decimal place to the nearest whole number * compare numbers with the same number of decimal places up to two decimal places <br> * solve simple measure and money problems involving fractions and decimals to two decimal places. |

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| Year Five | * read, write, order and compare numbers to at least 1000000 and determine the value of each digit $\&$ count forwards or backwards in steps of powers of 10 for any given number up to 1000 000 <br> \& interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero <br> * round any number up to 1000000 to the nearest $10,100,1000,10000$ and 100 000 <br> * solve number problems and practical problems that involve all of the above <br> * read Roman numerals to 1000 (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) <br> * add and subtract numbers mentally with increasingly large numbers <br> * use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy <br> *. solve addition and subtraction multistep problems in contexts, deciding which operations and methods to use and why. | * identify multiples and factors, including finding all factor pairs of a number, and common factors of two numbers <br> * know and use the vocabulary of prime numbers, prime factors and composite (nonprime) numbers <br> \& establish whether a number up to 100 is prime and recall prime numbers up to 19 <br> * 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 <br> \& multiply and divide numbers mentally drawing upon known facts <br> \& 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 <br> * multiply and divide whole numbers and those involving decimals by 10 , 100 and 1000 | * 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 <br> * 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, $52+54=$ $56=151$ ] <br> * 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 <br> * read and write decimal numbers as fractions [for example, $0.71=10071$ ] <br> * recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents <br> * round decimals with two decimal places to the nearest whole number and to one decimal place <br> * read, write, order and compare numbers with up to three decimal places <br> * solve problems involving number up to three decimal places <br> * recognise the per cent symbol (\%) and understand that per cent relates to 'number of parts per hundred', and |
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| Year Six | Number and Place value | Addition, subtraction, multiplication and division | Fractions including decimals and percentages |
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|  | * read, write, order and compare numbers up to 10000000 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 zero <br> $\because$ 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 <br> * 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 <br> * 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 <br> - perform mental calculations, including with mixed operations and large numbers <br> $\div$ identify common factors, common multiples and prime numbers <br> - use their knowledge of the order of operations to carry out calculations involving the four operations <br> * solve addition and subtraction multi-step problems in contexts, deciding which operations and methods to use and why <br> * 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 <br> * compare and order fractions, including fractions > 1 <br> * 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, $41 \times 21=81$ ] <br> * divide proper fractions by whole numbers [for example, $31 \div 2=61$ ] <br> $*$ associate a fraction with division and calculate decimal fraction equivalents [for example, 0.375 ] for a simple fraction [for example, 83 ] <br> - identify the value of each digit in numbers given to three decimal places and multiply and divide numbers by 10,100 and 1000 giving answers up to three decimal places <br> * multiply one-digit numbers with up to two decimal places by whole numbers <br> * use written division methods in cases where the answer has up to two decimal places <br> * solve problems which require answers to be rounded to specified degrees of accuracy |

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|  |  |  | * recall and use equivalences between simple fractions, decimals and percentages, including in different contexts. |
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| Year Six | Ratio and proportion | Algebra |  |
|  | asolve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts <br> \& solve problems involving the calculation of percentages [for example, of measures, and such as $15 \%$ of 360 ] and the use of percentages for comparison <br> \& solve problems involving similar shapes where the scale factor is known or can be found <br> * solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. | use simple formulae <br> * generate and describe linear number sequences <br> express missing number problems algebraically <br> * find pairs of numbers that satisfy an equation with two unknowns <br> \& enumerate possibilities of combinations of two variables. |  |

