



St Paul's CE VC Junior School – Progression of skills

Subject: Maths

| Subject Areas | Year 3 | Year 4 | Year 5 | Year 6 |
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| Number and Place Value | Count from 0 in multiples of 4, 8, 50 and 100. | Count in multiples of 6, 7, 9, 25 and 1000 | Count forwards or backwards in steps of powers of 10 for any given number up to 1 000 000 | |
| | Compare and order numbers up to 1000 Read and write numbers to 1000 in numerals and words | Order and compare numbers beyond 1000. | Read, write, order and compare numbers up to 1 000 000 | Read write, order and compare numbers up to 10 000 000 |
| | Recognise the place value of each digit in a 3-digit number (hundreds, tens, ones) | Recognise the place value of each digit in a 4-digit number (thousands, hundreds, ten and ones) | Determine the value of each digit in numbers up to 1 000 000 | Determine the value of each digit in numbers up to 10 000 000 |
| | Find 10 or 100 more or less than a given number. | Find 1000 more or less than a given number | | |
| | Identify, represent and estimate numbers using different representations | Identify, represent and estimate numbers using different representations | | |
| | Solve number and practical problems. | Solve number and practical problems with increasingly large positive numbers. | Solve number and practical problems | Solve number and practical problems |
| | | Read Roman numerals to 100 (I to C) and know that over time, the numeral system changed to include the concept of place value and zero. | Read Roman numerals to 1000 (M) and recognise years written in Roman numerals. | |
| | | Round any number to the nearest 10, 100 or 1000 | Round any number up to 1 000 000 to the nearest 10, 100, 1000, 10 000 and 100 000 | Round any whole number to a required degree of accuracy |
| | | Count backwards through zero to include negative numbers | Interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero | Use negative numbers in context, and calculate intervals across zero |

| | Year 3 | Year 4 | Year 5 | Year 6 |
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| Calculations – Addition, Subtraction, Multiplication and Division | Add and subtract numbers mentally including: <ul style="list-style-type: none"> • A 3-digit number and ones • A 3-digit number and tens • A 3-digit number and hundreds | | Add and subtract numbers mentally with increasingly large numbers | |
| | Add and subtract numbers with up to 3-digits, using formal written method of columnar addition and subtraction | Add and subtract numbers with up to 4-digits using the formal written methods of columnar addition and subtraction where appropriate | Add and subtract whole numbers with more than 4-digits, including using formal written methods (columnar addition and subtraction) | |
| | Estimate the answer to a calculation and use inverse operations to check answers | Estimate and use inverse operations to check answers to a calculation | Use rounding to check answers to calculations and determine, in the context of a problem, levels of accuracy | Use estimation to check answers to calculations and determine, in the context of a problem, an appropriate degree of accuracy |
| | Solve problems, including missing number problems, using number facts, place value, and more complex addition and subtraction. | Solve addition and subtraction two-step problems in contexts, deciding which operations and methods to use and why | Solve addition and subtraction multi step problems in contexts, deciding which operations and methods to use and why | Solve addition and subtraction multi step 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. | Identify common factors, common multiples and prime 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 | |
| | | | Recognise and use square numbers and cube numbers, and the notation for squared (²) and cubed (³) | |
| | Recall and use multiplication and division facts for the 3, 4 and 8 times tables. | Recall multiplication and division facts for multiplication tables up to 12 x 12 | Multiply and divide numbers mentally drawing upon known facts | Perform mental calculations, including with mixed operations and large numbers. |

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| | | Use place value, known and derived facts to multiply and divide mentally including: multiplying by 0 and 1; dividing by 1; multiplying three numbers together. | Multiply and divide whole numbers and those involving decimals by 10, 100 and 1000 | |
| | | Recognise and use factor pairs and commutativity in mental calculations | | |
| | Write and calculate mathematical statement for multiplication and division using the multiplication tables that pupils know, including for 2-digit numbers times 1-digit numbers using mental and progressing to formal written methods. | Multiply 2-digit and 3-digit numbers by a 1-digit number using formal written layout. | Multiply numbers up to 4-digits by a 1 or 2-digit number using a formal written method, including long multiplication for 2-digit numbers. | Multiply multi-digit numbers up to 4-digits by a 2-digit whole number using the formal written method of long multiplication. |
| | | | 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 | Divide numbers up to 4-digits by a 2-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. |
| | Solve problems, including missing number problems, involving multiplication and division, including integer scaling problems and correspondence problems in which n objects are connected to m objects. | Solve problems involving multiplying and adding, including using the distributive law to multiply 2-digit numbers by 1-digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects. | 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. |
| | | | Solve problems involving addition, subtraction, multiplication and division and a combination of these, including understanding the meaning of the equal sign. | |
| | | | Solve problems involving multiplication and division including scaling by simple fractions and problems involving simple rates. | |
| | | | | Use their knowledge of the order of operations to carry out calculations involving the four operations. |

| | Year 3 | Year 4 | Year 5 | Year 6 |
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| Fractions, Decimals and Percentages | 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 | Recognise and show, using diagrams, families of common equivalent fractions. | recognise mixed numbers and improper fractions and convert from one form to the other; write mathematical statements >1 as a mixed number [e.g. $2/5 + 4/5 = 6/5 = 1\ 1/5$] | use common factors to simplify fractions; use common multiples to express fractions in the same denomination |
| | Count up and down in tenths; recognise that tenths arise from dividing an object into 10 equal parts and in dividing one-digit number or quantities by 10. | Count up and down in hundredths; recognise that hundredths arise when dividing an object by one hundred and dividing tenths by ten. | identify name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths | |
| | compare and order unit fractions and fractions with the same denominators | | compare and order fractions whose denominators are all multiples of the same number | compare and order fractions, including fractions >1 |
| | add and subtract fractions with the same denominator within one whole [e.g. $5/7 + 1/7 = 6/7$] | add and subtract fractions with the same denominator | add and subtract fractions with the same denominator and denominators that are multiples of the same number | add and subtract fractions with different denominators and mixed numbers, using the concept of equivalent fractions |
| | | | multiply proper fractions and mixed numbers by whole numbers, supported by materials and diagrams | multiply simple pairs of proper fractions, writing the answer in its simplest form [e.g. $1/4 \times 1/2 = 1/8$] |
| | | | | divide proper fractions by whole numbers [e.g. $1/3 \div 2 = 1/6$] |
| | | recognise and write decimal equivalents to $1/4, 1/2, 3/4$ | read and write decimal numbers as fractions [e.g. $0.71 = 71/100$] | associate a fraction with division to calculate decimal fraction equivalents (e.g. 0.375) for a simple fraction [e.g. $3/8$] |
| | | recognise and write decimal equivalents of any number of tenths or hundredths | recognise and use thousandths and relate them to tenths, hundredths and decimal equivalents | |
| | | round decimals with one decimal place to | round decimals with two decimal places | |

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| | | the nearest whole number | to the nearest whole number and to one decimal place | |
| | | compare numbers with the same number of decimal places up to two decimal places | read, write, order and compare numbers with up to three decimal places | |
| | | 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 | | identify the value of each digit to three decimal places and multiply and divide numbers by 10, 100 and 1000 giving answers up to three decimal places |
| | | | | multiply one-digit numbers with up to two-decimal places by whole numbers |
| | | | | use written division methods in cases where the answer has up to two-decimal places |
| solve problems that involve previous fraction, decimals and percentages objectives | | 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 | solve problems involving numbers up to three decimal places | solve problems which require answers to be rounded to specified degrees of accuracy |
| | | solve simple measure and money problems involving fractions and decimals to two decimal places | | |
| | | | recognise the per cent symbol (%) and understand that per cent relates to 'number of parts per hundred'; write percentages as a fraction with denominator hundred, and as a decimal | recall and use equivalences between simple fractions, decimals and percentages, including in different contexts |
| | | | solve problems which require knowing percentage and decimal equivalents of $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{5}$, $\frac{2}{5}$, $\frac{4}{5}$ and those fractions with a denominator of a multiple of 10 or 25 | |

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| Ratio and Proportion | | | | solve problems involving the relative sizes of two quantities, where missing values can be found by using integer multiplication and division facts |
| | | | | solve problems involving the calculation of percentages [e.g. of measures such as 15% of 360] and the use of percentages for comparison |
| | | | | solve problem 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 |
| Algebra | | | | express missing number problems algebraically |
| | | | | use simple formulae |
| | | | | generate and describe linear number sequences |
| | | | | find pairs of numbers that satisfy an equation with two unknowns |
| | | | | enumerate possibilities of combinations of two variables |

| | Year 3 | Year 4 | Year 5 | Year 6 |
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| Measurement | compare lengths (m / cm / mm) | compare different measures, including money in pounds and pence | | |
| | compare mass (kg / g) | | | |
| | compare volume / capacity (l / ml) | | | |
| | measure lengths (m / cm / mm) | estimate different measures, including money in pounds and pence | | |
| | measure mass (kg / g) | | | |
| | measure volume / capacity (l / ml) | | | |
| | tell and write the time from an analogue clock; 12-hour clocks | read, write and convert time between analogue and digital 12-hour clocks | | |
| | tell and write the time from an analogue clock; 24-hour clocks | read, write and convert time between analogue and digital 24-hour clocks | | |
| | tell and write the time from an analogue clock, including using Roman numerals from I to XII | solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days | solve problems involving converting between units of time | |
| | estimate and read time with increasing accuracy to the nearest minute; record and compare time in terms of seconds, minutes and hours; use vocabulary such as o'clock / a.m. / p.m., morning, afternoon, noon and midnight | | | |
| | know the number of seconds in a minute and the number of days in each month, year and leap year | | | |
| | compare durations of events, [e.g. to calculate the time taken by particular events or tasks] | | | |
| | convert between different units of measurement [e.g. kilometre to metre; hour to minute] | convert between different units of metric measure [e.g. kilometre and metre; centimetre and metre; centimetre and millimetre; gram and | use, read, write and convert between standard units, converting measurements of length, mass, volume and time from a smaller unit of | |

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| | | | kilogram; litre and millilitre | measure to a larger unit, and vice versa, using decimal notation of up to three decimal places |
| | | | understand and use approximate equivalences between metric units and common imperial units such as inches, pounds and pints | convert between miles and kilometres |
| | measure the perimeter of simple 2-D shapes | measure and calculate the perimeter of a rectilinear figure (including squares) in centimetres and metres | measure and calculate the perimeter of composite rectilinear shapes in centimetres and metres | recognise that shapes with the same areas can have different perimeters and vice versa |
| | | find the area of rectilinear shapes by counting squares | calculate and compare the area of rectangles (including squares), and including using standard units, square centimetres (cm ²) and square metres (m ²) and estimate the area of irregular shapes | calculate the area of parallelograms and triangles |
| | | | | recognise when it is possible to use the formulae for the area of shapes |
| | add and subtract amounts of money to give change, using both pounds (£) and pence (p) in practical contexts | calculate different measures, including money in pounds and pence | use all four operations to solve problems involving measures [money] using decimal notation, including scaling | solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate |
| | add and subtract lengths (m / cm / mm) | | use all four operations to solve problems involving measure [e.g. length] using decimal notation, including scaling | |
| | add and subtract mass (kg / g) | | use all four operations to solve problems involving measure [e.g. mass] using decimal notation, including scaling | |
| | add and subtract volume / capacity (l / ml) | | use all four operations to solve problems involving measure [e.g. volume] using decimal notation, including scaling | |

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| Geometry - properties of shapes | identify horizontal, vertical lines and pairs of perpendicular and parallel lines | compare and classify geometric shapes, including quadrilaterals and triangles based on their properties and sizes | use the properties of rectangles to deduce related facts and find missing lengths and angles | compare and classify geometric shapes based on their properties and sizes |
| | | identify lines of symmetry in 2-D shapes presented in different orientations | distinguish between regular and irregular polygons based on reasoning about equal sides and angles | describe simple 3-D shapes |
| | | complete a simple symmetric figure with respect to a specific line of symmetry | | |
| | draw 2-D shapes | | | draw 2-D shapes using given dimensions and angles |
| | make 3-D shapes using modelling materials; recognise 3-D shapes in different orientations and describe them | | identify 3-D shapes including cubes and other cuboids, from 2-D representations | recognise and build simple 3-D shapes, including making nets |
| | recognise that angles are a property of shape or a description of a turn | identify acute and obtuse angles and compare and order angles up to two right angles by size | know angles are measured in degrees: estimate and compare acute, obtuse and reflex angles | find unknown angles in any triangles, quadrilaterals and regular polygons |
| | identify right angles, recognise that two right angles make a half-turn, three make three quarters of a turn and four a complete turn; identify whether angles are greater than or less than a right angle | | identify: <ul style="list-style-type: none"> angles at a point and one whole turn (total 360°) angles at a point on a straight line and 1/2 a turn (total 180°) other multiples of 90° | recognise angles where they meet at a point, are on a straight line, or are vertically opposite, and find missing angles |
| | | | draw given angles and measure them in degrees (°) | |
| | | | | illustrate and name parts of circles, including radius, diameter and circumference and know that the diameter is twice the radius |
| | | describe movements between positions as translations of a given unit to the left / right and up / down | identify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has | draw and translate simple shapes on the co-ordinate plane, and reflect them in the axes |

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| | | | not changed | |
| | | describe positions on a 2-D grid as co-ordinates in the first quadrant | | describe positions on the full co-ordinate grid (all four quadrants) |
| | | plot specified points and draw sides to complete a given polygon | | |

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| Statistics | interpret and present data using bar charts, pictograms and tables | interpret and present discrete and continuous data using appropriate graphical methods, including bar charts and time graphs | complete, read and interpret information in tables, including timetables | interpret and construct pie charts and line graphs and use these to solve problems |
| | solve one-step and two-step questions [e.g. 'How many more?' and 'How many fewer?'] using information presented in scaled bar charts, pictograms and tables | solve comparison, sum and difference problems using information presented in bar charts, pictograms, tables and other graphs | solve comparison, sum and difference problems using information presented in a line graph | |
| | | | | calculate and interpret the mean as an average |