St Thérèse of Lisieux
Catholic Multi Academy Trust

# ALGEBRA

## EQUATIONS

| Early Learning Goal | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 |
|---|---|---|---|---|---|---|---|
| | *solve one-step problems that involve addition and subtraction, using concrete objects and pictorial representations, and* ***missing number problems*** *such as* $7 = \quad - 9$ (copied from Addition and Subtraction) | *recognise and use the inverse relationship between addition and subtraction and use this to check calculations and* ***missing number*** *problems.* (copied from Addition and Subtraction) | solve problems, *including* ***missing number*** *problems, using number facts, place value, and more complex addition and subtraction.* (copied from Addition and Subtraction)<br><br>*solve problems, including* ***missing number*** *problems, involving multiplication and division, including integer scaling* (copied from Multiplication and Division) | | *use the properties of rectangles to deduce related facts and find* ***missing lengths and angles*** (copied from Geometry: Properties of Shapes) | express missing number problems algebraically | use algebraic methods to solve linear equations in one variable |
| | | | | | | find pairs of numbers that satisfy number sentences involving two unknowns | use and interpret algebraic notation, including:<br>$ab$ in place of $a \times b$, $3y$ in place of $y + y + y$ and $3 \times y$, $a^2$ in place of $a \times a$, $a^3$ in place of $a \times a \times a$; $a^2b$ in place of $a \times a \times b$<br>$^a/_b$ in place of $a \div b$ brackets<br><br>substitute positive integer values into formulae and expressions, including scientific formulae<br><br>understand the correct and incorrect use of '=';<br><br>understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors |
| | | | | | | enumerate all possibilities of combinations of two variables | |

| FORMULAE | | | | | | | |
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| Early Learning Goal | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 |
| | | | | *Perimeter can be expressed algebraically as 2(a + b) where a and b are the dimensions in the same unit.*<br>*(Copied from NSG measurement)* | | use simple formulae<br><br>*recognise when it is possible to use **formulae** for area and volume of shapes*<br>(copied from Measurement) | understand and use standard mathematical formulae |
| **SEQUENCES** | | | | | | | |
| | *sequence events in chronological order using language such as: before and after, next, first, today, yesterday, tomorrow, morning, afternoon and evening*<br>(copied from Measurement) | *compare and sequence intervals of time*<br>(copied from Measurement)<br><br>*order and arrange combinations of mathematical objects in patterns*<br>(copied from Geometry: position and direction) | | | | generate and describe linear number sequences | model simple situations or procedures involving two variables by translating them into linear algebraic expressions or formulae and by using graphs<br><br>produce graphs of linear functions of one variable with appropriate scaling, using equations in $x$ and $y$ and the Cartesian plane<br><br>interpret simple linear mathematical relationships, such as *y equals 5 times x* or *p is 3 more than twice q*, both |

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| | | | | | | | algebraically and graphically<br><br>use linear graphs to estimate values of *y* for given values of *x* and vice versa<br><br>from given linear graphs find approximate answers to simple contextual questions<br><br>generate terms of a sequence with a simple linear position-to-term rule (such as 'an expression for the value of the *n*th term is n + 2') from either the term-to-term or the position-to-term rule |

| RATIO AND PROPORTION | | | | | | | |
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| **Statements only appear in Year 6 but should be connected to previous learning, particularly fractions and multiplication and division** | | | | | | | |
| Early Learning Goal | Year 1 | Year 2 | Year 3 | Year 4 | Year 5 | Year 6 | Year 7 |
| | | | | | | solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts | express one quantity as a whole-number multiple of another, and by reversing the expression of the same relationship express one quantity as a unit fraction of another<br><br>understand that a multiplicative relationship between two quantities that can be expressed as a ratio of the form 1 : n where n is an integer can also be expressed as the unit fraction $^{1}/_{n}$<br><br>use ratio notation, including reduction to simplest form<br><br>relate the language of ratios and the associated calculations to the arithmetic of fractions |
| | | | | | | solve problems involving the calculation of percentages [for example, of measures, and such as 15% of 360] and the use of percentages for comparison | use the idea of compound units (A 'per' B), as in unit pricing, to solve problems |
| | | | | | | solve problems involving similar shapes where the scale factor is known or can be found | use scale factors of scale diagrams and maps in everyday contexts |
| | | | | | | solve problems involving unequal sharing and grouping using knowledge of fractions and multiples. | relate dividing a given quantity into two parts in a given part:whole ratio to finding a fraction of a quantity; relate part:part ratios of quantities to the corresponding part:whole ratios |

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