# National 4 Personal Learning Plan

| EF | Algebra | 👍 | 👉 | 👎 |
|---|---|---|---|---|
| | I can remove brackets<br>$3(x + 2) = 3x + 6$ | | | |
| | I can remove bracket and collect like terms<br>e.g.$2x + 3(x + 3y) = 5x + 9y$ | | | |
| | I can factorise an expression with a common factor<br>$3x + 6 = 3(x + 2)$ | | | |
| | I can simplify an algebraic expression with more than one variable<br>eg $4a + 3b + 2a – b = 6a + 2b$ | | | |
| | Evaluate linear expressions for given integer values | | | |
| | I can extend straightforward number or diagrammatic patterns<br>eg 4, 7, 10, 13… | | | |
| | I can extend straightforward number or diagrammatic patterns<br>eg 1, 1, 2, 3, 5……and 1, 4, 9, 16…… | | | |
| | I can determine a formula from information or a diagrammatic pattern | | | |
| | **Basic Geometric Properties** | 👍 | 👉 | 👎 |
| | I can find the area of a circle using $A = \pi R^2$ | | | |
| | I can find the circumference of circle using $C = \pi D$ | | | |
| | I can find the area of a rectangle using length x breadth | | | |
| | I can find the area of triangles | | | |
| | I can find the area of a rhombus or a kite | | | |
| | I can find the area of a parallelogram | | | |
| | I can find the area of composite 2D shapes | | | |
| | I can recognise faces, edges, vertices, diagonals, sides and angles in 2D & 3D shapes | | | |
| | I can draw nets of 2D shapes | | | |
| | I can calculate the surface area of a simple 3D shapes | | | |
| | I can find the volume of a cuboid and a cube using $V = l \times b \times h$ | | | |
| | I can calculate the volume of a triangular prism | | | |
| | I can calculate the volume of a cylinder | | | |
| | I can calculate the volume of other prisms given the area of the base | | | |
| | **Gradient of a Straight Line** | 👍 | 👉 | 👎 |
| | I can calculate the gradient of a straight line using the vertical height and horizontal distance between two points | | | |
| | I can distinguish between positive and negative gradients | | | |
| | I know parallel lines have the same gradient | | | |
| | **Symmetry** | 👍 | 👉 | 👎 |
| | I can identify the order of rotational symmetry of a shape | | | |
| | I can create a shape using rotational symmetry | | | |

| | Data Handling | 👍 | 👉 | 👎 |
|---|---|---|---|---|
| | I can construct a frequency table | | | |
| | I can calculate mean, median, mode and range of a list of numbers | | | |
| | I can calculate mean, median and mode from a frequency table | | | |
| | I can compare the mean and the range for two sets of data | | | |
| | I can interpret, draw and compare bar graphs | | | |
| | I can interpret, draw and compare line graphs | | | |
| | I can interpret, draw and compare pie charts with fraction/percentage/degree | | | |
| | I can state the probability of a simple event | | | |
| | I can interpret probability in the context of risk | | | |
| Rel | **Graphical Relationships** | 👍 | 👉 | 👎 |
| | I can draw a straight line by completing a table y = ax and y = ax + b | | | |
| | I know that the equation of a straight line is $y = mx + c$<br>e.g. $y = 2x + 1$ | | | |
| | I know what $m$ and c represent in the formula $y = mx + c$ | | | |
| | I know that vertical lines have an equation $x = a$ | | | |
| | I know that horizontal lines have an equation $y = b$ | | | |
| | **Algebra** | 👍 | 👉 | 👎 |
| | I can solve simple linear equations<br>e.g. $3x – 5 = x + 11$ | | | |
| | I can solve more complex linear equations<br>e.g. $x + 7 = 4x - 5$ | | | |
| | I can solve simple inequations<br>e.g. $2x + 1 < 10$ | | | |
| | I can change the subject of a formula<br>$v = u + at$ for $t$<br>$h = v/n$ | | | |
| | **The Theorem of Pythagoras** | 👍 | 👉 | 👎 |
| | I know that the longest side of a right angled triangle is called the Hypotenuse | | | |
| | I can use Pythagoras theorem to find the length of the hypotenuse of a right angled triangle | | | |
| | I can use Pythagoras Theorem to calculate the length of one of the shorter sides of a right angled triangle | | | |
| | I can use Pythagoras Theorem to solve problems in an everyday context | | | |
| | I can use Pythagoras Theorem to solve problems involving coordinates | | | |
| | **Similarity** | 👍 | 👉 | 👎 |
| | I can calculate the enlargement or reduction scale factor | | | |
| | I can calculate a missing length in | | | |

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|---|---|---|---|---|
| | mathematically similar shapes | | | |
| | **Properties of Geometric Shapes** | 👍 | 👉 | 👎 |
| | I can recognise equilateral, isosceles and scalene triangles | | | |
| | I know angles in a triangle add to 180° | | | |
| | I can use angle relationships involving parallel lines | | | |
| | I can name quadrilaterals | | | |
| | I know the properties of quadrilaterals | | | |
| | I can find missing angles in quadrilaterals using my knowledge of angles | | | |
| | I can describe the properties of a circle | | | |
| | I know that the angle in a semi circle is a right angle | | | |
| | I know that a tangent to a circle makes a right angle with the radius | | | |
| | **Trigonometry** | 👍 | 👉 | 👎 |
| | I know the ratios for Sine, Cosine and Tangent | | | |
| | I can find the length of a side using the Tangent Ratio | | | |
| | I can find the size of an angle using the Tangent Ratio | | | |
| | I can find the length of a side using the Sine Ratio | | | |
| | I can find the size of an angle using the Sine Ratio | | | |
| | I can find the length of a side using the Cosine Ratio | | | |
| | I can find the size of an angle using the Cosine Ratio | | | |
| | I know how to choose the correct ratio to solve a problem | | | |
| | I can use Sin, Cos and Tan to solve problems in an everyday context | | | |
| | **Scattergraphs** | 👍 | 👉 | 👎 |
| | I can construct a scattergraph | | | |
| | I can interpret a scattergraph | | | |
| | I can draw the line of best fit on a scattergraph | | | |
| | I can use the line of best fit to estimate one value given the other | | | |
| Nu | **Numeracy** | 👍 | 👉 | 👎 |
| | I can select and use appropriate numerical notation and units in problems involving money, time, measure, weight, volume and temperature | | | |
| | **Whole Numbers** | 👍 | 👉 | 👎 |
| | I can add and subtract whole numbers including negative numbers | | | |
| | I can multiply whole numbers of any size | | | |
| | I can divide whole numbers of any size by a single digit or 10 or 100 | | | |
| | I can round to the nearest significant figure | | | |
| | I can round to 2 decimal places | | | |
| | Find simple percentages and fractions of shapes and quantities | | | |

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|---|---|---|---|---|
| | Calculate percentage increase/decrease | | | |
| | Calculate rate e.g. texts per month, mph | | | |
| | Calculate distance given speed and time | | | |
| | Calculate time intervals in 12-24 hour clock | | | |
| | Calculate volume of a cube/cuboid | | | |
| | Calculate area of squares/rectangles | | | |
| | Calculate perimeter of shapes with straight lines | | | |
| | Calculate ratio and proportion | | | |
| | **Fractions, Decimals and Percentages** | 👍 | 👉 | 👎 |
| | I can find a percentage of a quantity<br>e.g. find 5% of £34 | | | |
| | I can find a percentage of a shape | | | |
| | I can find percentage increase and decrease | | | |
| | I can find a fraction of a quantity | | | |
| | I can find a fraction of a shape | | | |
| | I can convert between common fractions, decimals and percentages | | | |
| | **Ratio and Proportion** | 👍 | 👉 | 👎 |
| | I can solve simple problems on direct proportion<br>e.g. 3 cakes cost 75p, how much would 5 cakes cost? | | | |
| | **Calculations in Everyday Context** | 👍 | 👉 | 👎 |
| | I can calculate hourly rate, weekly wage and annual salary | | | |
| | I can calculate new wage given old wage and increase as a percentage | | | |
| | I understand the terms bonus and commission | | | |
| | I can calculate bonus and commission from given information | | | |
| | I understand the terms time and a half, double time and treble time and can calculate overtime payments | | | |
| | I understand what is meant by Hire Purchase and can carry out calculations involving Hire Purchase | | | |
| | I can calculate insurance premiums (building, contents and life)<br>e.g. premium on £64 500 at £2.90 per £1 000 | | | |
| | I can calculate car insurance (incl NCD) | | | |
| | I can calculate travel insurance (incl child discount) | | | |
| | I can convert from sterling to foreign currency by multiplying by the exchange rate | | | |
| | I can convert from foreign currency to sterling by dividing by the exchange rate | | | |
| | | | | |