

Key indicators for level 6 in Years 8 and 9

These key indicators are from the Framework yearly teaching programmes and are significant for tracking pupils' progress towards level 6.

Year 8	Year 9
<p>Using and applying mathematics to solve problems</p> <ul style="list-style-type: none"> • Use logical argument to establish the truth of a statement. <p>Numbers and the number system</p> <ul style="list-style-type: none"> • Add and subtract fractions by writing them with a common denominator. • Use the equivalence of fractions, decimals and percentages to compare proportions; calculate percentages and find the outcome of a given percentage increase or decrease. • Divide a quantity into two or more parts in a given ratio; use the unitary method to solve simple word problems involving ratio and direct proportion. 	<p>Using and applying mathematics to solve problems</p> <ul style="list-style-type: none"> • Solve substantial problems by breaking them into simpler tasks, using a range of efficient techniques, methods and resources, including ICT; give solutions to an appropriate degree of accuracy. • Present a concise, reasoned argument, using symbols, diagrams, graphs and related explanatory texts. <p>Numbers and the number system</p> <ul style="list-style-type: none"> • Add, subtract, multiply and divide fractions. • Use proportional reasoning to solve a problem, choosing the correct numbers to take as 100%, or as a whole.

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<p>Calculations</p> <ul style="list-style-type: none"> No KI for level 6 in Year 8 YTP. <p>Algebra</p> <ul style="list-style-type: none"> Plot the graphs of linear functions, where y is given explicitly in terms of x; recognise that equations of the form $y = mx + c$ correspond to straight-line graphs. 	<p>Calculations</p> <ul style="list-style-type: none"> No KI for level 6 in Year 9 YTP. <p>Algebra</p> <ul style="list-style-type: none"> Use systematic trial and improvement methods and ICT tools to find approximate solutions to equations such as $x^3 + x = 20$. Construct and solve linear equations with integer coefficients, using an appropriate method. Generate terms of a sequence using term-to-term and position-to-term definitions of the sequence, on paper and using ICT; write an expression to describe the nth term of an arithmetic sequence. Given values for m and c, find the gradient of lines given by equations of the form $y = mx + c$. Construct functions arising from real-life problems and plot their corresponding graphs; interpret graphs arising from real situations.

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<p>Shape, space and measures</p> <ul style="list-style-type: none"> • Identify alternate and corresponding angles; understand a proof that the sum of the angles of a triangle is 180° and of a quadrilateral is 360°. • Classify quadrilaterals by their geometric properties. • Enlarge 2-D shapes, given a centre of enlargement and a positive whole-number scale factor. • Use straight edge and compasses to do standard constructions. • Deduce and use formulae for the area of a triangle and parallelogram, and the volume of a cuboid; calculate volumes and surface areas of cuboids. 	<p>Shape, space and measures</p> <ul style="list-style-type: none"> • Solve geometrical problems using properties of angles, of parallel and intersecting lines, and of triangles and other polygons. • Visualise and use 2-D representations of 3-D objects; analyse 3-D shapes through 2-D projections, including plans and elevations. • Know that translations, rotations and reflections preserve length and angle and map objects on to congruent images. • Know and use the formulae for the circumference and area of a circle.

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<p>Handling data</p> <ul style="list-style-type: none"> • Construct, on paper and using ICT: <ul style="list-style-type: none"> – pie charts for categorical data – bar charts and frequency diagrams for discrete and continuous data – simple time graphs for time series – simple scatter graphs. <p>Identify which are most useful in the context of the problem.</p> <ul style="list-style-type: none"> • Find and record all possible mutually exclusive outcomes for single events and two successive events in a systematic way. 	<p>Handling data</p> <ul style="list-style-type: none"> • Design a survey or experiment to capture the necessary data from one or more sources; determine the sample size and degree of accuracy needed; design, trial and, if necessary, refine data collection sheets; construct tables for large discrete and continuous sets of raw data, choosing suitable class intervals; design and use two-way tables. • Select, construct and modify, on paper and using ICT, suitable graphical representation to progress an enquiry including scatter graphs to develop further understanding of correlation. • Communicate interpretations and results of a statistical survey using selected tables, graphs and diagrams in support. • Know that the sum of probabilities of all mutually exclusive outcomes is 1 and use this when solving problems.