



SUBJECT	MATHS		YEAR	10
Why do we study maths? The maths curriculum provides me with the knowledge I need to be mathematically fluent and develops my mathematical reasoning and problem-solving skills.				
What will I learn about this year?			What have I learnt about before?	
Number				
Rounding – deepen understanding and extend truncating and performing calculations with upper and lower bounds Fractions and decimals – deepen understanding and extend to converting between fractions and recurring decimals Calculations with numbers in standard form Systematic listing Product rule for counting			Rounding to required accuracy, estimation and identifying bounds Fractions and decimals - equivalence, ordering and the 4 operations (including negatives) Interpret and compare numbers in standard form Rules of indices up to negative integer powers	
Algebra				
Forming and solving linear equations – extended to unknowns on both sides and with brackets. Expanding products of two or more binomials and factorising quadratic expressions including difference of two squares and expression of the form $ax^2 + bx + c$ Solving quadratic equations by factorising. Straight line graphs – deepen understanding and extend to equations of perpendicular lines Plotting and identifying key features of quadratic graphs. Sequences – deepen understanding and extend to algebraic examples and finding the nth term of quadratic sequences.			Forming and solving equations with unknowns on one side including with brackets and solving equations with unknowns on both sides. Expanding products of two binomials and factorising linear expressions Straight line graphs – plotting and understanding $y=mx+c$ and equations of parallel lines Calculating gradients between two points Plotting quadratic graphs Types of sequences and finding the nth term of linear sequences	
Ratio and Proportion				
Percentages – deepen understanding and extend to more complex problems. Ratios – deepen understanding and extend to applying ratios to real life contexts and problems. Units of Measure extend to metric conversions between length, area and volume. Compound measures – deepen understanding and extend to rates of pay and pressure. Real life graphs – deepen understanding and extend to interpreting the gradients and equations of straight lines in context.			Percentages – find of amounts (including with multipliers), percentage increase and decrease, reverse percentages Ratios – Equivalence, recipes, ratios as fractions, sharing in ratio Converting between different units – time, length, mass, capacity Compound measures - speed, unit pricing and density Conversion graphs Sketching and drawing non-linear graphs to find approximate solutions to real life problems – distance time graphs and quadratic, piece-wise linear, exponential and reciprocal functions	
Geometry				
Transformations – deepen understanding and extend to enlargements with negative SF, combining transformations and identifying invariant points. Angles in polygons extended to multi-step problems and geometric proofs. Area and perimeter problems including in context and algebraic examples. Area and circumference of circles extended to sectors and working in terms of pi. 3D shapes inc. surface area and volume - extends to pyramids, spheres, cones Pythagoras and Trigonometry (right angled triangles) deepen understanding and extend to multistep problems and in 3D. Congruence and similarity – deepen understanding and use congruence criteria for triangles and extend concepts of similarity to area and volume Bearings including back bearings Draw plans and elevations Construction and Loci – deepen understanding			Transformations (including using translation vectors) Angle facts - on a line, around a point, vertically opposite, in polygons and in parallel lines Area – rectangles, parallelograms, triangles, trapezia and compound shapes Area and circumference of circles Properties of 2D and 3D shapes Volume and surface area - Prisms, cylinders and composite shapes Pythagoras and trigonometry (right angled triangles) Identify congruent shapes and construct congruent triangle and find missing side lengths on similar shapes Identify plans and elevations Interpreting scale drawings (ratio) Construction and loci	
Statistics				
Collecting data – extends to using samples and understanding the limitations of sampling Presenting data: in tables and in graphs and charts – extends to histograms, cumulative frequency diagrams and box plots Calculating averages and range - extends to include grouped data Scatter graphs – extends to understanding correlation vs causality and interpolation vs extrapolation			Collecting data Presenting data: in tables and in graphs and charts Calculating averages and range (not with grouped frequency tables) Scatter graphs	
Probability				
Probability – extends to using systematic listing strategies and product rule for counting, deepening understanding bias and expected values Venn Diagrams – extends to more complex set notation and conditional probabilities Probabilities of combined events including using tree diagrams Calculate conditional probabilities using two - way tables, tree diagrams, Venn diagrams			Calculating probabilities, including mutually exclusive events Use of sample space diagrams and Venn diagrams Calculate relative frequencies and expected values	
Where you can read more				
<i>Desperate Measures</i> (previously <i>Desperate Measures: Length, Area and Volume</i>), (measuring lines: units and accuracy, old measuring systems, the development of metric, the SI system and powers of ten, shapes, measuring areas and area formulas, weight, angles, measuring volume, Archimedes Principle, density, time and how the modern calendar developed.) <i>Savage Shapes</i> (previously <i>Vicious Circles and Other Savage Shapes</i>), (signs in geometric diagrams, Loci, constructions: perpendicular bisectors; dropping perpendiculars; bisecting angles, triangles: similar; congruent; equal areas, polygons: regular; irregular; angle sizes and construction, tessellations and Penrose Tiles, origami, circles: chord; tangent; angle theorems, regular solids, Euler's formula, ellipses, Geometric proof of Pythagoras' Theorem.) Murderous Maths series: author Kjartan Poskitt				