

YEAR 10 Scheme of Learning 2020-21

	CR1: Representation	CR2: Pytha/Trigonometry and constructions	CR3: Fractions Ratio and proportion	CR4 equations/formulae/ compound measures
Year 10 Autumn amended	<p><u>Two way tables</u></p> <ul style="list-style-type: none"> Work out conditional probabilities from two-way tables (H) <p><u>Frequency Trees: review</u></p> <p><u>Venn Diagrams</u></p> <ul style="list-style-type: none"> Use a Venn diagram to calculate conditional probability <p><u>Product of prime factors / multiples in context</u></p> <ul style="list-style-type: none"> Find the HCF and LCM of two numbers, by listing, Venn diagrams and using prime factors: include finding HCF/LCM given the prime factorisation of two numbers; <p><u>Probability</u></p> <p>Review: Use and draw sample space diagrams; Review: Use tree diagrams to calculate the probability of two independent or dependant events;</p> <ul style="list-style-type: none"> Find probabilities from a list or freq. tables; Identify different mutually exclusive outcomes Find the probability of an event happening including using relative frequency; Estimate the number of times an event will occur, given the probability and no. of trials Compare relative freq. from samples of different sizes; Understand conditional probabilities Find a missing probability from a list or table including algebraic terms. 	<p><u>Pythagoras and trigonometry</u></p> <p><u>Review Pythagoras' theorem 1</u></p> <p><u>Review Pythagoras' theorem 2</u></p> <p><u>Trigonometry 1</u></p> <p><u>Trigonometry 2</u></p> <p><u>Trigonometry 3</u></p> <p>Review bearings</p> <ul style="list-style-type: none"> Find angles of elevation and depression; Know the exact values of $\sin \theta$ and $\cos \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ, 60^\circ$ and 90°; know the exact value of $\tan \theta$ for $\theta = 0^\circ, 30^\circ, 45^\circ$ and 60°. Solve multi-step problems that require the use of both Pythagoras and trigonometry <p><u>Constructions</u></p> <ul style="list-style-type: none"> Construct triangles, construct the perpendicular bisector of a line or point to line construct the angle bisector Use constructions to solve loci problems including with bearings 	<p><u>Fractions</u></p> <ul style="list-style-type: none"> Compare the size of fractions; Find a fraction of an amount; Express one quantity as a fraction of another $\pm/\times/\div$ fractions; Find the reciprocal <p><u>Ratio Review: Recipes, best buys exchange rates inc conversion graph</u></p> <ul style="list-style-type: none"> Write ratios in their simplest form; Compare ratios; Share in a given ratio Write ratios in form $1 : m$ find one quantity given other problems involving mixing, Write a ratio as a fraction; Write a ratio as a linear function; use a ratio to compare a scale model to a real-life object; Write lengths, areas and volumes of two shapes as ratios <p><u>Direct and inverse proportion</u></p> <ul style="list-style-type: none"> Solve word problems involving direct & inverse proportion; Solve proportion problems using the unitary method; Solve problems involving direct or inverse proportion using graphs, and read values from graphs; Understand inverse proportion: as x increases, y decreases 	<p><u>Review expanding brackets, single, multiple single and double</u></p> <ul style="list-style-type: none"> Argue mathematically to show algebraic expressions are equivalent; <p><u>Factorise</u> Review factorising single and double $a = 1$</p> <ul style="list-style-type: none"> Solve quadratic equations by factorising; Find the roots of a quadratic function algebraically. <p><u>Solve equations</u></p> <p>Review: Solve linear equations, with integer/fractional coefficients, in which the unknown appears on one side or on both sides of the equation including use brackets;</p> <ul style="list-style-type: none"> Use algebraic representations for consecutive integers even numbers $2n$, and odd numbers $2n + 1$; <p><u>Simultaneous equations</u></p> <ul style="list-style-type: none"> Write simultaneous equations to represent a situation; Solve simultaneous equations (linear/linear) algebraically Solve simultaneous equations representing a real-life situation, graphically and algebraically, and interpret the solution in the context of the problem. <p><u>Subject of formulae</u></p> <p><u>review Compound measures, Real life graphs</u></p> <ul style="list-style-type: none"> Change the subject of a formula when one/two step is required. including the use of square roots and squares; Interpret gradient as the rate of change Draw straight line graphs for real-life situations, calculate: the speed of individual sections, total distance and total time;
Year 10 Spring amended	<p><u>CR5: Inequalities and averages</u></p> <p><u>Review Averages from a frequency table</u></p> <p><u>Inequalities</u></p> <ul style="list-style-type: none"> Show inequalities on number lines; Write down whole number values that satisfy an inequality; Solve an inequality e.g. $-3 < 2x + 1 < 7$ Construct inequalities to represent a set shown on a no. line; Solve simple linear inequalities in one variable <p><u>Rounding and error intervals</u></p> <ul style="list-style-type: none"> Round answers to a given degree of accuracy, dp'ss sig figs. Use inequality notation to specify simple error intervals due to truncation or rounding. <p><u>Estimation</u></p> <ul style="list-style-type: none"> Estimate answers to calculations by rounding numbers to 1 significant figure or an appropriate level of rounding <p><u>Standard index form: calculations, Review: index laws</u></p> <ul style="list-style-type: none"> Convert large and small numbers into standard form Add and subtract numbers in standard form; Multiply and divide numbers in standard form; Use a calculator display for standard form Order numbers expressed in different ways 	<p><u>CR6: Linear and Quadratic graphs</u></p> <p><u>Linear graphs</u></p> <p>Review: Plot and draw graphs of lines of the form $y = mx + c$</p> <p><u>Review:</u> finding nth term of a linear sequence</p> <ul style="list-style-type: none"> Plot and draw graphs of lines in the form $ax + by = c$ <p><u>Simultaneous equations</u></p> <ul style="list-style-type: none"> Solve simultaneous equations (linear/linear) graphically; Solve simultaneous equations representing a real-life situation, graphically and interpret the solution <p><u>Quadratic graphs</u></p> <ul style="list-style-type: none"> Review: Continue and generate a quadratic sequence Plot graphs of quadratic functions, State the line of symmetry of a quadratic graph; Identify and interpret roots, intercepts and turning points of quadratic graphs. Recognise a linear, quadratic, cubic and reciprocal graph <p><u>Coordinate geometry</u></p> <p>Review: midpoint of 2 coordinates</p> <ul style="list-style-type: none"> Identify and interpret gradient from an eqn $ax + by = c$; Sketch a linear graph using the gradient and y-intercept; Identify parallel lines from their equations; Find an approximate solution to a linear eqn using a graph; 	<p><u>CR7: Angles</u></p> <p><u>Alternate and corresponding angles</u></p> <ul style="list-style-type: none"> Recall basic angle facts Use the angle properties of triangles, Use the angle properties of intersecting lines; Find the exterior angle of a triangle <p>Review: Understand and use the angle properties of parallel lines using the properties of corresponding and alternate angles, giving reasons;</p> <ul style="list-style-type: none"> Form and solve equations in various contexts such angles <p><u>Interior and exterior angles</u></p> <ul style="list-style-type: none"> Use the sum of the exterior angles of any polygon Use the sum of the interior angle and the exterior Find the size of each interior angle, or the size of each exterior angle, or the number of sides of a regular polygon, and use the sum of angles of irregular polygons; Identify shapes which are congruent Explain why some polygons fit together and others do not; Form and solve equations involving angles in a polygon 	<p><u>CR8: Percentages</u></p> <p><u>Percentage of an amount</u></p> <ul style="list-style-type: none"> Find a percentage of a quantity, including using a multiplier; Use a multiplier to increase or decrease by a percentage in any scenario where percentages are used; Compare proportions using percentages; Percentages over 100%; Understand the multiplicative nature of percentages as operators. Express one quantity as a percentage of another inc. the percentage is greater than 100% Calculate percentage profit or loss; <p><u>Interest and growth, Depreciation and decay</u></p> <p>Review: Make calculations involving repeated percentage change</p> <p>Review: Continue a geometric progression and find the term-to-term rule,</p> <ul style="list-style-type: none"> Know the difference between simple and compound interest Use compound interest; Set up, solve and interpret the answers in growth and decay problems; <p><u>Reverse percentage problems</u></p> <ul style="list-style-type: none"> Find the original amount with and without a calculator given the final amount after a percentage increase or decrease or The amount of the increase or decrease
Year 10 Summer amended	<p><u>CR9 Area inc circles arcs and sectors</u></p> <p>Review: area of compound shapes inc fractions of circles</p> <ul style="list-style-type: none"> Calculate arc lengths, angles and areas of sectors of circles; identify and apply circle definitions and properties, Convert between metric area measures. Find the surface area of a cylinder; Find the surface area of a pyramid; Use the formulae for surface area of spheres/cones;/ frustums Find the surface of compound solids constructed from cubes, cuboids, cones, pyramids, spheres, hemispheres, cylinders; Form and solve equations in various contexts such as; Perimeter , Area (including those that result in quadratic expressions) 	<p><u>CR10 b volume</u></p> <p>Review plans and elevations</p> <p>Review: Volume of a prism inc cylinder</p> <ul style="list-style-type: none"> Convert between metric volume measures; Recall and use the formula for volume of pyramid Use the formulae for volume of a spheres and cones; extend to frustums Find the volumes of compound solids constructed from cubes, cuboids, cones, pyramids, spheres, hemispheres, cylinders; Form and solve equations in various contexts 	<p><u>CR11 congruence and similarity transformations</u></p> <p>Review: <u>Transformations</u></p> <ul style="list-style-type: none"> Identify and solve problems with congruent shapes Identify and solve problems with shapes which are similar Prove that two shapes are similar <p><u>Vectors</u></p> <ul style="list-style-type: none"> Understand and use column notation in relation to vectors; Be able to represent information graphically given column vectors; Identify two column vectors which are parallel; Calculate using column vectors, represent graphically, 	<p><u>CR12: Real life graphs</u></p> <p>Review line graphs, frequency polygons, time series graph</p> <p>Review: Compare distributions</p> <p><u>Scattergraphs</u></p> <ul style="list-style-type: none"> Draw scatter graphs; Identify outliers Use the line of best fit make predictions; interpolate and extrapolate Interpret correlation state the relationship between two variables; State how reliable their predictions are, i.e. not reliable if extrapolated. <p><u>Pie charts</u></p> <ul style="list-style-type: none"> Construct and interpret pie charts Form and solve equations with pie charts