Maths
Trinty Academy New Bridge

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SUBJECT: MATHS Year 7:					
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Transition Term for Year 7 Baseline Assessment **Topic:** **Unit 1: Analysing and displaying data** **Aims and Objectives:** Find information from tables and pictograms. Find information from bar and bar-line charts. Display data using bar and bar-line charts. Organise data using a tally chart. Understand and use frequency tables. Understand and draw a grouped bar chart. Find the mode and modal class. Find the mean, median and range. Compare data using their range, mode and median. **Topic**: **Unit 2: Calculating**	**Topic:** **Unit 3: Expression, functions and formulae** **Aims and Objectives:** Find outputs of simple functions. Simplify expressions. Write expressions in words. Substitute numbers into formulae. Write formulae using words and letter symbols. **Topic:** **Unit 4: Graphs** **Aims and Objectives:** Read information from graphs. Draw graphs to show change. Write the coordinates of points and plot points from their coordinates.	**Topic:** **Unit 5:** **Factors and multiples** **Aims and Objectives:** Understand BIDMAS. Understand the rules of multiplication. Use the operation keys on a calculator. Recognise and work out multiples. Multiply and divide 3-digit numbers by a single digit. Round numbers to the nearest 100 and 1000. Use a calculator to solve multiplication and division problems. Recognise and use multiples, factors and primes. Find common factors and common multiples. **Topic:** **Unit 6:** **Decimals and**	**Topic:** **Unit 7:** **Angles and lines** **Aims and Objectives:** Recognise acute, right and obtuse angles. Recognise quarter, half and three-quarter turns. Recognise parallel and perpendicular lines. Use compass points. Estimate, measure and draw angles. Find missing angles on a straight line and round a point.	**Topic:** **Unit 8:** **Measuring and Shapes** **Aims and Objectives:** Identify triangles, squares and rectangles. Recognise the properties of triangles, squares and rectangles. Estimate, measure and draw acute, obtuse and reflex angles. Label lines and angles. Find missing angles on a straight line and round a point. **Topic:** **Unit 9:** **Fractions, decimals and percentages** **Aims and Objectives:** Order fractions. Use fractions to describe parts of shapes. Identify equivalent fractions.	**Topic:** **Unit 10:** **Transformations** **Aims and Objectives:** Reflect a shape in a mirror line. Translate a shape. Draw and describe rotations. Identify congruent shapes.

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Aims and Objectives: Add and subtract numbers together. Round to the nearest 10. Approximate before adding and subtracting. Multiply and divide numbers. Recognise multiples, square numbers and square roots. Use approximation. Solve ratio and proportion problems. Use negative numbers. Continue a sequence.	Plot graphs of simple functions. Read values from graphs. Draw line graphs to show relationships. Read values from science graphs.	**measures** **Aims and Objectives:** Estimate, and choose suitable units, to measure length, mass and capacity. Draw and measure lines to the nearest mm and cm. Read and interpret scales and record measurements. Record estimates. Read and write numbers. Understand, compare, order and use decimals. Read and interpret scales using decimals. Order metric measurements. Convert between different units of measure. Recognise and extend number sequences by counting in decimals. Add and subtract decimal numbers. Use mental methods with decimals. Round decimals.		Simplify fractions by cancelling. Change an improper fraction to a mixed number. Calculate fractions of quantities. Add and subtract fractions. Understand percentage as 'the number of parts per 100'. Write a percentage as a fraction or decimal. Calculate percentages.	

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		Use a calculator with decimals. Multiply and divide decimal numbers.			
Text: "The Data Detective" by Tim Harford "The Number Devil" by Hans Magnus Enzensberger	**Text:** "Algebra for Beginners" by Hall and Knight, "The Manga Guide to Algebra" by Shin Takahashi. "Algebra and Graphs" by June Haighton.	**Text:** "Mathematics: A Very Short Introduction" by Timothy Gowers.	**Text:** Website: BBC Bitesize – Angles	**Text:** Khan Academy - Fractions, Decimals, and Percentages	**Text:** Website: IXL - Transformations
Reading: Articles on data visualization from websites like Khan Academy Articles on basic arithmetic from BBC Bitesize	**Reading**: Articles on Khan Academy related to algebraic expressions and functions. BBC Bitesize for comprehensive resources on graphing.	**Reading**: Factors and Multiples - Wordwall	**Reading**: Geometry: A Comprehensive Course by Dan Pedoe	**Reading**: Geometry for Dummies by Mark Ryan	**Reading**: Transformations in Geometry by George E. Martin
Maths/Numeracy: Worksheets on bar charts and frequency tables Practice problems on addition, subtraction, multiplication, and division	**Maths/Numeracy:** IXL for interactive practice on expressions, functions, and formulae. Desmos for interactive graphing.	**Maths/Numeracy:** Quizizz for customizable quizzes on factors and multiples	**Maths/Numeracy:** Being able to use a calculator to answer more challenging questions	**Maths/Numeracy:** Using a protractor Knowing number bonds to 100	**Maths/Numeracy:** Reading axis on a graph

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Literacy: Writing a report on a data set Writing explanations for solving arithmetic problems	**Literacy**: Mathwords for understanding mathematical terminology.	**Literacy:** Mathwords for understanding mathematical terminology.	**Literacy:** Mathwords for understanding mathematical terminology.	**Literacy:** Mathwords for understanding mathematical terminology.	**Literacy:** Mathwords for understanding mathematical terminology.
Speech Lang Com / Oracy: Presenting findings from a data analysis project Explaining calculation methods to a peer	**SLC / Oracy:** Reading and presenting information from a graph TED-Ed for educational videos on mathematical concepts.	**SLC / Oracy:** Explaining the difference between a factor and a multiple Explaining where you may use decimals in the real world	**SLC / Oracy:** Describing the different types of angles and ways to remember the classification	**SLC / Oracy:** Explaining how to convert between fractions, decimals and percentages Providing reasons for the size of missing angles	**SLC / Oracy:** Explain the term congruency
Assessment: GL assessment End of unit test Quizzes on interpreting data Timed arithmetic tests	**Assessment**: Kahoot! for interactive quizzes on algebra topics. End of unit test GL assessment	**Assessment:** GL assessment End of unit test	**Assessment:** GL assessment End of unit test	**Assessment:** GL assessment End of unit test	**Assessment:** GL assessment End of unit test
Real World Links / Careers: Data analyst Statistician Accountant	**Real World Links / Careers**: Trends Statistician	**Real World Links / Careers:** If two activities occur every 6 days and 8 days, you would find the (LCM) to know when both events will happen on the same day again.	**Real World Links / Careers:** The angle of a roof's slope is important for water drainage and to avoid the accumulation of snow.	**Real World / Careers:** Shapes appear everywhere in nature, from the roundness of fruits (like apples) to the hexagonal patterns found in honeycomb structures.	**Real World Links / Careers:** The symmetry you see in animals, plants, and even human faces involves reflections.

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SUBJECT: MATHS Year 8:					
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Topic: **Unit 1: Number Properties and Calculations** **Aims and Objectives:** Add and subtract larger numbers and negative numbers. Multiply and divide larger numbers and negative numbers. Use brackets. Find equivalent ratios. Solve word problems involving ratio. Understand the relationship between ratio and proportion. Use proportion to solve simple problems. **Topic**: **Unit 2: Shapes and Measures** **Aims and Objectives:**	**Topic:** **Unit 3: Statistics** **Aims and Objectives:** Design a data collection sheet. Group data into equal class intervals. Interpret complex bar charts. Draw bar charts for more than one set of data. Interpret pie charts. **Topic:** **Unit 4: Expressions and Equations** **Aims and Objectives:** Simplify expressions by collecting like terms. Find outputs and inputs of function machines. Construct functions.	**Topic:** **Unit 5: Decimal Calculations** **Aims and Objectives:** Add and subtract decimal numbers. Multiply decimals. Round decimals. Order decimals. Solve problems involving decimals. **Topic:** **Unit 6: Angles** **Aims and Objectives:** Use a protractor to measure and draw obtuse and reflex angles. Estimate the size of reflex angles. Use vertically opposite angles.	**Topic:** **Unit 7: Number Properties** **Aims and Objectives:** Calculate squares and square roots, mentally and using a calculator. Calculate cubes and cube roots, mentally and using a calculator. Do calculations involving brackets and square numbers. Use the brackets keys on a calculator. Use index notation. Find the factor pairs of any whole number. Use the lowest common multiple (LCM) and highest common factor (HCF) to solve problems.	**Topic:** **Unit 8: Sequences** **Aims and Objectives:** Recognise, describe and continue number sequences. Find and use pattern and term-to-term rules. Use the term-to-term rule to work out terms in a sequence. Recognise an arithmetic sequence. Describe and continue sequences. Recognise a geometric sequence. Generate terms of a sequence using the position-to-term rule. Find the nth term of a simple sequence. **Topic: Unit 9:**	**Topic:** **Unit 10: Probability** **Aims and Objectives:** Use the language of probability. Use a probability scale with words and numbers. Write probabilities as fractions, decimals and percentages. Find all the possible outcomes of an event. Use equally likely outcomes to calculate probabilities. Learn and use probability notation. Calculate the probability of an event not happening. Find all the possible outcomes of two simple events.

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Recognise and name 3D shapes. Count faces edges and vertices. Deduce properties of 3D shapes from 2D representations. Identify and draw nets of 3D solids. Calculate the surface area of cubes and cuboids. Find the volume of a cube or cuboid by counting cubes. Know the formula for calculating the volume of a cube or cuboid. Solve problems involving units of length, area and capacity. Convert between cm3 and litres.	Solve simple equations and check the solution is correct. Understand the difference between an expression and an equation, and identify the unknown in an equation. Use brackets with numbers and letters.	Work out the size of unknown angles in a triangle. Accurately draw triangles using a ruler and protractor. Accurately draw a net of a 3D shape. Investigate the sides of a right-angled triangle.		**Fractions and Percentages** **Aims and Objectives:** Compare fractions. Simplify fractions. Identify equivalent fractions. Calculate with fractions. Calculate fractions of quantities. Multiply a fraction by a whole number. Add and subtract fractions. Write a number as a fraction of another number. Change between fractions and percentages. Calculate percentages. Compare proportions using percentages. Write one number as a percentage of another number.	Use data from an experiment to estimate probabilities. Collect data from an experiment, and make calculations based on results.
Text: Alex's Adventures in Numberland by Alex Bellos	**Text:** Khan Academy BBC Bitesize	**Text:** Khan Academy BBC Bitesize	**Text:** Khan Academy BBC Bitesize	**Text:** Khan Academy BBC Bitesize	**Text:** Khan Academy BBC Bitesize

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The Joy of x by Steven Strogatz					
Reading: Worksheets on number properties from MathsWatch Articles on geometry from MathsIsFun	**Reading**: IXL - Statistics and Probability	**Reading**: Mathematics for Key Stage 3 by Karen Hughes & Stephen Doyle	**Reading**: KS3 Mathematics Complete Study & Practice (CGP)	**Reading**: Exploring Mathematics for Key Stage 3 by David Waller (Collins)	**Reading**: Worded problem questions on probability
Maths/Numeracy: Exercises on ratios and proportions Problems on calculating area and volume Problems on calculating area and volume	**Maths/Numeracy:** Draw a dual bar chart	**Maths/Numeracy:** Complete functional skills question on angles	**Maths/Numeracy:** Use the bracket key on a calculator	**Maths/Numeracy:** Work with fractions and percentages on real life situations	**Maths/Numeracy:** Complete retrieval activities on statistics
Literacy: Writing about the importance of number properties in real life Describing the properties of different shapes	**Literacy**: Write down the importance of algebra in maths	**Literacy:** Use worded problem questions that include decimals	**Literacy:** Write down the importance of using brackets in maths questions	**Literacy:** Explain how to multiply a fraction by a whole number using words	**Literacy:** Use the language of probability
Speech Lang Com / Oracy: Discussing number properties in small groups Presenting a project on 3D shapes	**SLC / Oracy:** Explain the difference between an expression and an equation, and identify the unknown in an equation.	**SLC / Oracy:** Explain to someone how to use a protractor to measure angles	**SLC / Oracy:** Explain what a square number and a cube number is	**SLC / Oracy:** Recognise, describe and continue number sequences.	**SLC / Oracy:** Describe the probability of an event happening
Assessment: GL assessment Tests on number properties and calculations	**Assessment**: GL assessment End of unit test Functional skills questions	**Assessment:** GL assessment End of unit test	**Assessment:** GL assessment End of unit test	**Assessment:** GL assessment End of unit test	**Assessment:** GL assessment End of unit test

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Quizzes on shapes and measures					
Real World Links / Careers: Engineer, mathematician Architect, surveyor	**Real World Links / Careers**: Software developer, data analyst, economist, electrical engineer	**Real World Links / Careers:** Scientists in all fields use decimals to measure quantities with great precision.	**Real World Links / Careers:** You use square numbers and square roots with Pythagoras theory	**Real World / Careers:** Interior designer, carpenter, pilot, camera operator	**Real World Links / Careers:** Meteorologists use probability to predict weather patterns. Insurance companies rely heavily on probability to assess risks and set premiums.

SUBJECT: MATHS Year 9:					
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Topic: Unit 1: Number **Aims and Objectives:** Order positive and negative numbers and decimals; use the symbols <, > and ≠	**Topic: Unit 2: Algebra** **Aims and Objectives:** Use notation and symbols Write an expression Identify expression/equation/formula/identity Collect 'like' terms;	**Topic:** **Unit 3:** **Graphs, tables and charts** **Aims and Objectives:** Use suitable data collection techniques Design and use data-collection sheets for data	**Topic:** **Unit 5:** **Equations, inequalities and sequences** **Aims and Objectives:** Select an expression/equation/formula/identity from a list Write expressions and set up simple equations including	**Topic:** **Unit 6: Angles** **Aims and Objectives:** Estimate sizes of angles Measure angles using a protractor	**Topic:** **Unit 8:** **Perimeter, area and volume 1** **Aims and Objectives:** Indicate given values on a scale, including decimal value

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Use four operations Recall multiplication facts and use with division Multiply or divide numbers by powers of 10 Use brackets and BIDMAS with powers Round numbers to a given power of 10 Check answers by rounding and inverse operations Use decimal notation and place value Identify the value of digits in decimals or whole numbers Write decimal numbers of millions Round to the nearest integer	Multiply together two algebraic expressions Simplify expressions by cancelling Use index notation and the index laws Understand ≠ and introduce ≡ Multiply a single number term over a bracket Simplify expressions using squares and cubes Simplify expressions involving brackets Show algebraic expressions are equivalent Recognise factors of algebraic terms Factorise algebraic expressions Write expressions to solve problems Substitute numbers in algebraic expressions involving brackets and powers Derive a formula Substitute numbers into formula and word formula	Use inequalities for grouped data, and introduce ≤ and ≥ signs Sort, classify and tabulate data Extract data from lists and tables Use correct notation for time Work out time taken for a journey from a timetable Construct tables for time-series data Design, complete and use two-way tables Calculate frequency from a frequency table Read off frequency values from a frequency table Find greatest and least values Identify the mode and modal class from data Plotting coordinates in first quadrant and read graph scales in multiples; Produce and interpret: • pictograms; • composite bar charts • dual/comparative bar charts for categorical	forming an equation from a word problem Use function machines Solve simple equations Rearrange simple equations Substitute into a formula, and solve the resulting equation Find an approximate solution to a linear equation using a graph Solve angle or perimeter problems using algebra Write an equation to solve a word problem Show inequalities on number lines Write down whole number values that satisfy an inequality Solve an inequality and show the solution set on a number line Solve two inequalities in x, find the solution sets and compare them to see which value of x satisfies both Use the correct notation to show inclusive and exclusive inequalities Construct inequalities to represent a set shown on a number line Solve simple linear inequalities in one variable, and represent the solution set on a number line	Use geometric language Use letters to identify points, lines and angles Use two-letter notation for a line and three-letter notation for an angle Describe angles as turns and in degrees and understand clockwise and anticlockwise Know that there are 360° in a full turn, 180° in a half turn and 90° in a quarter turn Identify a line perpendicular to a given line on a diagram and use their properties Identify parallel lines on a diagram and use their properties	Know that measurements using real numbers depend upon the choice of unit Convert between units of measure within one system Make sensible estimates of a range of measures in everyday settings Measure shapes to find perimeters and areas using a range of scales Find the perimeter and area of • rectangles and triangles • parallelograms and trapezia • compound shapes Estimate surface areas by rounding measurements Find the surface area of a prism Find surface area using rectangles and triangles Convert between metric area measures

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Round to certain decimal places and significant figures Estimate answers to calculations by rounding Use one calculation to find the answer to another Find squares and cubes Use index notation for squares and cubes Evaluate expressions involving squares, cubes and roots Use index notation for powers of 10, including negative powers Use the laws of indices to		and ungrouped discrete data • bar-line charts • vertical line charts • line graphs • line graphs for time-series data • histograms with equal class intervals • stem and leaf Recognise simple patterns, characteristic and relationships in bar charts and line graphs Interpret and discuss data Interpret tables; represent data in tables and charts Know which charts to use for different types of data sets Draw circles and arcs to a given radius Know there are 360 degrees in a full turn, 180 degrees in a half turn, and 90 degrees in a quarter turn Measure and draw angles, to the nearest degree	Round answers to a given degree of accuracy Use inequality notation to specify simple error intervals due to truncation or rounding Recognise sequences of odd and even numbers, and other sequences Use function machines to find terms of a sequence Write the term-to-term definition of a sequence in words; Find a specific term in the sequence using position-to-term or term-to-term rules Generate arithmetic sequences of numbers, triangular number, square and cube integers and sequences derived from diagrams Recognise such sequences from diagrams and draw the next term in a pattern sequence Find the next term in a sequence, including negative values Find the nth term Use the nth term of an arithmetic sequence Continue a geometric progression and find the term-to-term rule	Find missing angles using properties of corresponding and alternate angles Understand and use the angle properties of parallel lines Recall the properties and definitions of special types of quadrilaterals List the properties of each special type of quadrilateral, or identify a shape Draw sketches of shapes Classify quadrilaterals by their geometric properties and name all quadrilaterals that have a specific property Identify quadrilaterals from everyday usage	Identify and name common solids Sketch nets of cuboids and prisms Recall and use the formula for the volume of a cuboid Find the volume of a prism Calculate volumes of right prisms and shapes made from cubes and cuboids Estimate volumes Convert between metric volume measures Convert between metric measures of volume and capacity

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multiply and divide numbers Use calculators for all calculations List all three-digit numbers that can be made from three numbers Recognise odd, even and prime numbers Identify factors and multiples Find the prime factor decomposition of numbers and write as a product using index notation Find common factors and common multiples of two numbers Find the LCM and HCF of two numbers		Construct pie charts for categorical data and discrete/continuous numerical data Interpret pie charts using simple fractions and percentages; and multiples of 10% sections Understand that the frequency represented by corresponding sectors in two pie charts is dependent upon the total populations represented by each of the pie charts Draw scatter graphs Interpret points on a scatter graph Identify outliers and ignore them on scatter graphs Draw the line of best fit on a scatter diagram by eye, and understand what it represents Use the line of best fit make predictions; interpolate and extrapolate apparent trends whilst knowing the dangers of so doing Distinguish between positive, negative and no correlation using lines of best fit	Continue a quadratic sequence and use the nth term to generate terms Distinguish between arithmetic and geometric sequences.	Given some information about a shape on coordinate axes, complete the shape Understand and use the angle properties of quadrilaterals Use the fact that angle sum of a quadrilateral is 360° Recall and use properties of angles at a point, angles at a point on a straight line, right angles, and vertically opposite angles Distinguish between triangles Derive and use the sum of angles in a triangle and find a missing angle in a triangle Understand and use the angle properties of triangles	

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Understand that the prime factor decomposition of a positive integer is unique Solve problems using HCF, LCM and prime numbers		Use a line of best fit to predict values of a variable given values of the other variable Interpret scatter graphs in terms of the relationship between two variables Interpret correlation in terms of the problem Understand that correlation does not imply causality State how reliable their predictions are **Topic:** **Unit 4:** **Fractions and percentages** **Aims and Objectives:** Use diagrams to find equivalent fractions or compare fractions Write fractions to describe shaded parts of diagrams Express a given number as a fraction of another Write a fraction in its simplest form and find equivalent fractions Order fractions, by using a common denominator		Use the symmetry property of isosceles triangle to show that base angles are equal Use the side/angle properties of isosceles and equilateral triangles Understand and use the angle properties of intersecting lines Understand a proof that the exterior angle of a triangle is equal to the sum of the interior angles at the other two vertices; Use geometrical language, give reasons for angle calculations Recognise and name pentagons, hexagons, heptagons, octagons and decagons	

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		Compare fractions, use inequality signs, compare unit fractions Convert between mixed numbers and improper fractions Add and subtract fractions, write the answer as a mixed number Multiply and divide an integer by a fraction, including finding fractions of quantities or measurements Understand and use unit fractions as multiplicative inverses Multiply fractions: simplify calculations by cancelling first Divide a fraction by a whole number and by fractions Recall the fraction-to-decimal conversion and convert fractions to decimals Convert a fraction to a decimal to make a calculation easier Recognise recurring decimals and convert fractions into recurring decimals Compare and order fractions, decimals and integers, using inequality signs		Understand 'regular' and 'irregular' as applied to polygons Use the sum of angles of irregular polygons Calculate and use the sums of the interior angles of polygons Calculate and use the angles of regular polygons Use the sum of the interior angles of an n-sided polygon Use the sum of the exterior angles of any polygon is 360° Use the sum of the interior angle and the exterior angle is 180° Identify shapes which are congruent Explain why some polygons fit together	

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		Understand that a percentage is a fraction in hundredths Express a given number as a percentage of another number Convert between fractions, decimals and percentages Order fractions, decimals and percentages Express a given number as a percentage of another number Find a percentage of a quantity without a calculator Find a percentage of a quantity or measurement Calculate amount of increase/decrease Use percentages in real-life situations, including percentages greater than 100% Use decimals to find quantities Find a percentage of a quantity, including using a multiplier Use a multiplier to increase or decrease by a percentage Understand the multiplicative nature of percentages as operators		**Topic:** **Unit 7: Averages and Range** **Aims and Objectives:** Specify the problem and plan an investigation, decide what data to collect and what statistical analysis is needed, consider fairness Recognise types of data: primary secondary, quantitative and qualitative Identify which primary data they need to collect Collect data from a variety of suitable primary and secondary sources Understand how sources of data may be biased and not be representative	

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				Understand sample and population Interpret and find a range of averages as follows Understand that the expression 'estimate' will be used where appropriate Compare the mean, median, mode and range of two distributions Recognise the advantages and disadvantages between measures of average	
Text: Khan Academy BBC Bitesize IXL	**Text:** Khan Academy BBC Bitesize IXL	**Text:** Khan Academy BBC Bitesize IXL	**Text:** Khan Academy BBC Bitesize IXL	**Text:** Khan Academy BBC Bitesize IXL	**Text:** Khan Academy BBC Bitesize IXL
Reading: KS3 Mathematics	**Reading**: KS3 Mathematics Complete Study & Practice (CGP)	**Reading**: KS3 Mathematics Complete Study & Practice (CGP)	**Reading**: KS3 Mathematics Complete Study & Practice (CGP)	**Reading**: KS3 Mathematics Complete Study & Practice (CGP)	**Reading**: KS3 Mathematics Complete Study & Practice (CGP)

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Complete Study & Practice (CGP)					
Maths/Numeracy: KS4 maths resources on the OneDrive folder – unit is broken down into chronological lessons	**Maths/Numeracy:** KS4 maths resources on the OneDrive folder – unit is broken down into chronological lessons	**Maths/Numeracy:** KS4 maths resources on the OneDrive folder – unit is broken down into chronological lessons	**Maths/Numeracy:** KS4 maths resources on the OneDrive folder – unit is broken down into chronological lessons	**Maths/Numeracy:** KS4 maths resources on the OneDrive folder – unit is broken down into chronological lessons	**Maths/Numeracy:** KS4 maths resources on the OneDrive folder – unit is broken down into chronological lessons
Literacy: Identify and define 5 keywords relating to the unit	**Literacy**: Explain to someone what is "collecting like terms"	**Literacy:** Explain what the term correlation means	**Literacy:** Write the term-to-term definition of a sequence in words	**Literacy:** List the properties of each special type of quadrilateral	**Literacy:** Identify and define 5 keywords relating to the unit
SLC / Oracy: Give verbal feedback to a peer	**SLC / Oracy:** Explain to staff how to expand and factorise with algebra	**SLC / Oracy:** Present findings in graphs, tables and charts to the rest of the class	**SLC / Oracy:** Explain the term-to-term definition of a sequence in words	**SLC / Oracy:** Ask a peer a challenging/extension question	**SLC / Oracy:** Explain why solids may be common
Assessment: GL assessment End of unit test Functional skills test	**Assessment**: GL assessment End of unit test Functional skills test	**Assessment:** GL assessment End of unit test Functional skills test	**Assessment:** GL assessment End of unit test Functional skills test	**Assessment:** GL assessment End of unit test Functional skills test	**Assessment:** GL assessment End of unit test Functional skills test

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Real World Links / Careers: Finance and budgeting Engineering	**Real World Links / Careers**: Personal finance Shopping and discounts Cooking and recipes	**Real World Links / Careers:** Teacher, chef, pharmacist, scoring and performance in sport	**Real World Links / Careers:** Loan repayment Engineering Medicine Marketing and business	**Real World / Careers:** Navigation and geography In retail design, angles are used to arrange products on shelves or displays	**Real World Links / Careers:** Running tracks Sports fields Event planning Landscape and gardening Road design

SUBJECT: MATHS Year 10:					
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Topic: **Unit 9: Graphs** **Aims and Objectives:** Use input/output diagrams Draw, label and scale axes Use axes and coordinates to specify points in four quadrants in 2D	**Topic:** **Unit 11: Ratio and proportion** **Aims and Objectives:** Understand and express the division of a quantity into a of number parts as a ratio Write ratios in their simplest form	**Topic:** **Unit 12: Right-angled triangles** **Aims and Objectives:** Understand, recall and use Pythagoras' Theorem in 2D Justify if a triangle is right-angled Calculate the length of the hypotenuse and of a	**Topic:** **Unit 14: Multiplicative reasoning** **Aims and Objectives:** Understand and use compound measures: density; pressure; speed Convert between metric speed measures	**Topic:** **Unit 15: Constructions, loci and bearing** **Aims and Objectives:** Understand clockwise and anticlockwise Draw circles and arcs to a given radius or given the diameter Measure and draw lines, to the nearest mm	**Topic:** **Unit 17: Perimeter, area and volume 2** **Aims and Objectives:** Recall the definition of a circle and identify, name and draw parts of a circle Recall and use formulae for the

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Identify points with given coordinates and coordinates of a given point in all four quadrants Find the coordinates of points identified by geometrical information in 2D Find the coordinates of the midpoint of a line segment Read values from straight-line graphs Draw straight line graphs Draw distance-time graphs and velocity-time graphs Work out time intervals for graph scales Interpret distance-time graphs, and calculate: the speed of individual sections, total distance and total time	Write/interpret a ratio to describe a situation Share a quantity in a given ratio Solve a ratio problem in context Use a ratio to find one quantity when the other is known Use a ratio to compare a scale model to an object Use a ratio to convert between measures and currencies and problems involving mixing Compare ratios Write ratios in form 1 : m or m : 1 Write a ratio as a fraction Write a ratio as a linear function Write lengths, areas and volumes of two shapes as ratios	shorter side in a right-angled triangle Apply Pythagoras' Theorem with a triangle drawn on a coordinate grid Calculate the length of a line segment AB given pairs of points Understand, use and recall the trigonometric ratios sine, cosine and tan, and apply them to find angles and lengths in general triangles in 2D figures; Use the trigonometric ratios to solve 2D problems including angles of elevation and depression Round answers to appropriate degree of accuracy Know the exact values of sin θ and cos θ for θ = 0°, 30°, 45°, 60° and 90°; know the exact value of	Read values in km/h and mph Calculate average speed, distance, time Use kinematics formulae to calculate speed, acceleration Change d/t in m/s to a formula in km/h, with support Express a number as a percentage of another number Calculate percentage profit or loss Make calculations involving repeated percentage change, Find the original amount given the final amount after a percentage change Use compound interest Use measures in ratio and proportion problems	Measure and draw angles, to the nearest degree Know and use compass directions Draw sketches of 3D solids Know the terms face, edge and vertex Identify and sketch planes of symmetry of 3D solids Make accurate drawings of triangles and 2D shapes using a ruler and a protractor Construct diagrams of everyday 2D situations involving rectangles, triangles, perpendicular and parallel lines Understand and draw front and side elevations and plans of shapes Given the front and side elevations and the plan of a solid, draw a sketch of the 3D solid	circumference and area of a circle Use $\pi \approx 3.142$ or use the π on a calculator Give an answer to a question involving the circumference or area of a circle in terms of π; Find radius or diameter, given area or perimeter Find the perimeters and areas of semicircles and quarter-circles Calculate perimeters and areas of composite shapes made from circles Calculate arc lengths, angles and areas of sectors of circles Find the surface area and volume of a cylinder Find the surface area and volume of

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Interpret information presented in a range of linear and non-linear graphs Interpret graphs with negative values on axes Find the gradient of a straight line Interpret gradient as the rate of change Use function machines to find coordinates Plot and draw graphs of $y = a$, $x = a$, $y = x$ and $y = -x$; Recognise straight-line graphs parallel to the axes Recognise that equations of the form $y = mx + c$ correspond to straight-line graphs in the coordinate plane Plot and draw graphs of straight lines of the	Express a multiplicative relationship between two quantities as a ratio or a fraction. Understand and use proportion as equality of ratios Solve word problems involving direct and inverse proportion Work out which product is the better buy Scale up recipes Convert between currencies Find amounts for 3 people when amount for 1 given; Solve proportion problems using the unitary method Recognise when values are in direct proportion by reference to the graph form	tan θ for θ = 0°, 30°, 45° and 60°. **Topic:** **Unit 13: Probability** **Aims and Objectives:** Distinguish between events which are impossible, unlikely, even chance, likely, and certain to occur Mark events and/or probabilities on a probability scale of 0 to 1 Write probabilities in words or fractions, decimals and percentages Find the probability of an event happening using theoretical probability Use theoretical models to include outcomes using dice, spinners, coins	Set up, solve and interpret the answers in growth and decay problems Understand that X is inversely proportional to Y is equivalent to X is proportional to $\frac{1}{Y}$ Interpret equations that describe direct and inverse proportion.	Understand and identify congruent shapes Use straight edge and a pair of compasses to do standard constructions: understand, from the experience of constructing them, that triangles satisfying SSS, SAS, ASA and RHS are unique, but SSA triangles are not construct the perpendicular bisector of a given line construct the perpendicular from a point to a line construct the bisector of a given angle	spheres, pyramids, cones and composite solids Round answers to a given degree of accuracy.

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form $y = mx + c$ using a table of values Sketch a graph of a linear function, using the gradient and y-intercept Identify and interpret gradient from an equation $y = mx + c$ Identify parallel lines from their equations Plot and draw graphs of straight lines in the form $ax + by = c$ Find the equation of a straight line from a graph **Topic**: **Unit 10: Transformations** **Aims and Objectives:** Identify congruent shapes by eye Understand clockwise and anticlockwise Understand that rotations are	Understand inverse and direct proportion	List all outcomes for single events systematically Work out probabilities from frequency and two way tables Record outcomes of probability experiments in tables Add simple probabilities Identify different mutually exclusive outcomes Know that the sum of the probabilities of all outcomes is 1 Using $1 - p$ as the probability of an event not occurring Find a missing probability from a list or table including algebraic terms Find the probability of an event happening		construct angles of 90°, 45° Draw and construct diagrams, including: a region bounded by a circle and an intersecting line a distance from a point and a distance from a line equal distances from two points or two line segments regions may be defined by 'nearer to' or 'greater than' Find and describe regions satisfying a combination of loci Use constructions to solve loci problems Use and interpret maps and scale drawings	

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specified by a centre, an angle and a direction of rotation Find the centre of rotation, angle and direction of rotation and describe rotations fuly Rotate a shape about a point Draw the position of a shape after rotation about a centre Identify correct rotations Understand that translations are specified by a distance and direction using a vector Translate a given shape by a vector Describe and transform 2D shapes using single translations		using relative frequency Estimate the number of times an event will occur, given the probability and the number of trials List all outcomes for combined events systematically Use and draw sample space diagrams Work out probabilities from Venn diagrams Use union and intersection notation Compare experimental data and theoretical probabilities Compare relative frequencies from samples of different sizes Find the probability of successive events		Estimate lengths using a scale diagram Make an accurate scale drawing from a diagram Use three-figure bearings to specify direction Mark on a diagram the position of point B given its bearing from point A Give a bearing between the points on a map or scaled plan Given the bearing of a point A from point B, work out the bearing of B from A Use drawing to solve bearings problems Solve locus problems including bearings. **Topic:** **Unit 16:** **Quadratic equations and graphs** **Aims and Objectives:**	

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Use column vectors to describe translations Understand that distances and angles are preserved under rotations and translations Understand that reflections are specified by a mirror line Identify correct reflections Identify the equation of a line of symmetry Transform 2D shapes using single reflections Describe reflections on a coordinate grid Scale a shape on a grid (without a centre specified) Understand that an enlargement is specified by a centre and a scale factor		Use tree diagrams to calculate the probability of two independent and dependent events		Define a 'quadratic' expression Multiply together algebraic expressions with brackets Square a linear expression Factorise quadratic expressions Factorise a quadratic expression using the difference of two squares; Solve quadratic equations by factorising Find the roots of a quadratic function algebraically Generate points and plot graphs of simple quadratic functions, then more general quadratic functions Identify the line of symmetry of a quadratic graph Find approximate solutions to quadratic equations using a graph	

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Enlarge a given shape using Find the centre of enlargement by drawing Describe and transform 2D shapes using enlargements by: a positive integer scale factor and a fractional scale factor Identify the scale factor of an enlargement Understand that distances and angles are preserved under reflections Understand that similar shapes are enlargements of each other and angles are preserved				Interpret graphs of quadratic functions from real-life problems Identify and interpret roots, intercepts and turning points of quadratic graphs	
Text: Khan Academy BBC Bitesize	**Text:** Khan Academy BBC Bitesize	**Text:** Khan Academy BBC Bitesize	**Text:** Khan Academy BBC Bitesize	**Text:** Khan Academy BBC Bitesize	**Text:** Khan Academy BBC Bitesize

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IXL Revisely	IXL Revisely	IXL Revisely	IXL Revisely	IXL Revisely	IXL Revisely
Reading: CPG GCSE Maths Edexcel Revision Guide: Foundation	**Reading**: Write a ratio to describe a situation	**Reading**: CPG GCSE Maths Edexcel Revision Guide: Foundation	**Reading**: CPG GCSE Maths Edexcel Revision Guide: Foundation	**Reading**: CPG GCSE Maths Edexcel Revision Guide: Foundation	**Reading**: CPG GCSE Maths Edexcel Revision Guide: Foundation
Maths/Numeracy: KS4 maths resources on the OneDrive folder – unit is broken down into chronological lessons	**Maths/Numeracy:** KS4 maths resources on the OneDrive folder – unit is broken down into chronological lessons	**Maths/Numeracy:** KS4 maths resources on the OneDrive folder – unit is broken down into chronological lessons	**Maths/Numeracy:** KS4 maths resources on the OneDrive folder – unit is broken down into chronological lessons	**Maths/Numeracy:** KS4 maths resources on the OneDrive folder – unit is broken down into chronological lessons	**Maths/Numeracy:** KS4 maths resources on the OneDrive folder – unit is broken down into chronological lessons
Literacy: Identify and define 5 keywords relating to the unit	**Literacy**: Use a dictionary to understand the term multiplicative	**Literacy:** Use the glossary in the CGP to independently revise the topic	**Literacy:** Worded maths questions	**Literacy:** Functional skills questions relating to the unit	**Literacy:** Worded GCSE questions related to the unit
SLC / Oracy: Describe a transformation to a peer	**SLC / Oracy:** Give peer feedback verbally	**SLC / Oracy:** Present a presentation on Pythagoras theory	**SLC / Oracy:** Retrieval task – share your prior knowledge of function machines from Unit 4 in Year 8	**SLC / Oracy:** Explain to the class how to remember the direction of clockwise and anticlockwise	**SLC / Oracy:** Give peer feedback verbally
Assessment: GCSE questions End of unit test Functional skills questions	**Assessment**: GCSE questions End of unit test Functional skills questions	**Assessment:** GCSE questions End of unit test Functional skills questions	**Assessment:** GCSE questions End of unit test Functional skills questions	**Assessment:** GCSE questions End of unit test Functional skills questions	**Assessment:** GCSE questions End of unit test Functional skills questions
Real World Links / Careers: Weather forecasting Health	**Real World Links / Careers**: Cooking Finance Maps	**Real World Links / Careers:** Construction	**Real World Links / Careers:** Travelling Scaling	**Real World / Careers:** Geocaching Aviation	**Real World Links / Careers:** Problem solving in maths Resource planning Design and aesthetics

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SUBJECT: MATHS Year 11:					
Autumn 1	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
Topic: **Unit 18:** **Fractions, indices and standard form** **Aims and Objectives:** Add and subtract mixed number fractions Multiply mixed number fractions Divide mixed numbers by whole numbers Find the reciprocal of an integer, decimal or fraction Understand 'reciprocal' as multiplicative inverse	**Topic:** **Unit 20:** **Algebra** **Aims and Objectives:** Know the difference between an equation and an identity and use and understand the ≠ symbol Change the subject of a formula involving the use of square roots and squares Answer 'show that' questions using consecutive integers, squares, even numbers and odd numbers	**Topic:** **Revision and exam skills** **Aims and Objectives:**	**Topic:** **Revision and exam skills** **Aims and Objectives:**	**Topic:** ***Revision and exams*** ***Paper 1: Non-calculator*** ***Paper 2: Calculator*** ***Paper 3: Calculator***	**Topic:** ***Revision and exams*** ***Paper 1: Non-calculator*** ***Paper 2: Calculator*** ***Paper 3: Calculator***

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Use index laws to simplify and calculate the value of numerical expressions Use numbers raised to the power zero, including the zero power of 10 Convert large and small numbers into standard form Add, subtract, multiply and divide numbers in standard form Interpret a calculator display using standard form **Topic**: **Unit 19:** **Congruence, similarity and vectors** **Aims and Objectives:** Use the basic congruence criteria	Solve problems involving inverse proportion using graphs, and read values Find the equation of the line through two given points; Recognise, sketch and interpret graphs of simple cubic functions Recognise, sketch and interpret graphs of the reciprocal function $y = \frac{1}{x}$ with $x \neq 0$ Use graphical representations of inverse proportion to solve problems Identify and interpret the gradient from an equation $ax + by = c$ Write simultaneous equations to represent a situation Solve simultaneous equations				

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for triangles (SSS, SAS, ASA and RHS) Solve angle problems involving congruence Identify shapes which are similar Understand similarity of triangles and of other plane shapes Identify the scale factor of an enlargement of a shape Understand the effect of enlargement on perimeter Solve problems to find missing lengths in similar shapes Know that scale diagrams, including bearings and maps are 'similar' to the real-life examples Understand and use column notation in relation to vectors	algebraically and graphically				

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Be able to represent information graphically given column vectors Identify two column vectors which are parallel Calculate using column vectors, and represent graphically, the sum of two vectors, the difference of two vectors and a scalar multiple of a vector.					
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SLC / Oracy: Verbal feedback to peers	**SLC / Oracy:** Identify and explain 2 strengths and area you'd like to revise	**SLC / Oracy:** Present to the class an area you have revised, class share findings	**SLC / Oracy:** Explain a topic to the teacher you have revised at home	**SLC / Oracy:** Explain what a GCSE question is asking you to do for the working out	**SLC / Oracy:** Feedback an area of strength from your exam
Assessment: GCSE questions End of unit test Functional skills questions	**Assessment**: GCSE questions End of unit test Functional skills questions	**Assessment:** GCSE questions End of unit test Functional skills questions	**Assessment:** GCSE questions End of unit test Functional skills questions	**Assessment:** GCSE questions End of unit test Functional skills questions Exams	**Assessment:** GCSE questions End of unit test Functional skills questions Exams
Real World Links / Careers: Cooking and recipes Finance and budgeting	**Real World Links / Careers**: Applying prior knowledge to exam questions	**Real World Links / Careers:** Looking at options for the next stage and what the next stage requires in terms of qualifications	**Real World Links / Careers:** Calculator skills	**Real World / Careers:** Linking revision to exam questions	**Real World Links / Careers:** Supporting learners with qualifications and their next stage

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