Curriculum Long Term Planning Overview	Key Stage 3	Subject Area: Maths	

Year	Study Modules	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Year 7 Set 3 and UP	**Study Modules**	**Number 1 and Calculating** • Recall prime numbers up to 50 • Know how to test if a number up to 150 is prime • Know the meaning of 'highest common factor' and 'lowest common multiple' • Recognise when a problem involves using the highest common factor of two numbers • Recognise when a problem involves using the lowest common multiple of two numbers • Understand the use of notation for powers • Know the meaning of the square root symbol (√) • Use a scientific calculator to calculate powers and roots • Make the connection between squares and square roots (and cubes and cube roots) • Use inequality symbols to compare numbers and decimals • Make correct use of the symbols = and ≠ • Place a set of negative numbers in order • Place a set of mixed positive and negative numbers in order • Add or subtract from a negative number	**Algebraic Manipulation 1** • Know the meaning of expression, term, formula, equation, function • Know basic algebraic notation (the rules of algebra) • Use letters to represent variables • Identify like terms in an expression • Simplify an expression by collecting like terms • Know how to multiply a (positive) single term over a bracket (the distributive law) • Given a function, establish outputs from given inputs • Given a function, establish inputs from given outputs • Use a mapping diagram (function machine) to represent a function • Use an expression to represent a function • Use the order of operations correctly in algebraic situations	**Exploring FDP and Calculating with FDP** • Identify a common denominator that can be used to order a set of fractions • Order fractions where the denominators are not multiples of each other • Write one quantity as a fraction of another where the fraction is less than 1 • Write one quantity as a fraction of another where the fraction is greater than 1 • Write a fraction in its lowest terms by cancelling common factors • Find equivalent fractions • Identify when a fraction can be scaled to tenths or hundredths • Convert between mixed numbers and top-heavy fractions • Apply addition and subtraction to proper fractions, improper fractions and mixed numbers • Multiply proper, improper fractions and mixed numbers • Divide a proper fraction by a proper fraction and apply	**Proportional Reasoning** • Convert fluently between metric units of length • Convert fluently between metric units of mass • Convert fluently between metric units of volume / capacity • Convert fluently between units of time • Convert fluently between units of money • Solve practical problems that involve converting between units • State conclusions clearly using the units correctly • Describe a comparison of measurements or objects using the language 'a to b' • Describe a comparison of measurements or objects using ratio notation a:b • Use ratio notation to describe a comparison of more than two measurements or objects • Convert between different units of measurement • State a ratio of measurements in the same units	**Algebraic Manipulation 2, Formulae and Solving Equations I** • now how to write products algebraically • Simplify an expression involving terms with combinations of variables (e.g. $3a^2b + 4ab^2 + 2a^2 – a^2b$) • Recognise a simple formula written in words • Interpret the information given in a written formula • Substitute positive numbers into formulae • Interpret the information that results from substituting into a formula • Create a one-step formula from given information • Create a two-step formula from given information • Use symbols to represent variables in a formula • Building equations • Choose the required inverse operation when solving an equation • Identify the correct order of undoing the operations in an equation	**Investigating angles** • Use a ruler and protractor to measure angles • Use a ruler and protractor to draw angles • Identify fluently angles at a point, angles at a point on a line and vertically opposite angles • Identify known angle facts in more complex geometrical diagrams • Use knowledge of angles to calculate missing angles in geometrical diagrams • Know that angles in a triangles total 180° • Find missing angles in triangles • Find missing angles in isosceles triangles • Know that angles in a quadrilateral total 360° • Find missing angles in quadrilaterals • Explain reasoning using vocabulary of angles Use knowledge of all angle facts to calculate missing angles in geometric diagrams linking to algebra **Constructions 1** • Know the meaning of faces, edges and vertices

		• Add (or subtract) a negative number to (from) a positive number • Add (or subtract) a negative number to (from) a negative number • Multiply positive numbers by a negative number • Multiply negative numbers by a negative number • Divide positive numbers by a negative number • Divide negative numbers by a negative number		division to improper fractions and mixed numbers • Identify if a fraction is terminating or recurring • Recall some decimal and fraction equivalents (e.g. tenths, fifths, eighths) • Write a decimal as a fraction • Convert a fraction to a decimal by scaling (when possible) • Use a calculator to change any fraction to a decimal • Understand that a percentage means 'number of parts per hundred' • Write a percentage as a fraction • Write a quantity as a percentage of another • Calculate a percentage of an amount • Identify the multiplier for a percentage increase or decrease • Use calculators to increase (decrease) an amount by a percentage using multiplicative methods • Compare two quantities using percentages • Write a decimal as a percentage • Write a fraction as a percentage	• Simplify a ratio by cancelling common factors • Identify when a ratio is written in its lowest terms • Find the value of a 'unit' in a division in a ratio problem • Divide a quantity in two parts in a given part:part ratio • Divide a quantity in two parts in a given part:whole ratio Express correctly the solution to a division in a ratio problem **Sequences 1** • Identify the first 10 triangular numbers • Recall the first 15 square numbers • Recall the first 5 cube numbers • Use linear number patterns to solve problems Use a term-to-term rule to generate a linear sequence • Use a term-to-term rule to generate a non-linear sequence • Find the term-to-term rule for a sequence • Describe a number sequence • Solve problems involving the term-to-term rule for a sequence • Solve problems involving the term-to-term rule for a non-numerical sequence	• Solve one-step equations when the solution is a whole number (fraction) • Solve two-step equations (including the use of brackets) when the solution is a whole number • Solve two-step equations (including the use of brackets) when the solution is a fraction • Solve three-step equations (including the use of brackets) when the solution is a whole number • Solve three-step equations (including the use of brackets) when the solution is a fraction • Check the solution to an equation by substitution	• Apply the meaning of faces, edges and vertices to describe 3D shapes • Use notation for parallel lines • Know the meaning of 'perpendicular' and identify perpendicular lines • Know the meaning of 'regular' polygons • Identify line and rotational symmetry in polygons • Use AB notation for describing lengths Use ∠ABC notation for describing angles • Visualise a 3D shape from its net • Recall the names and shapes of special triangles and quadrilaterals • Know the meaning of a diagonal of a polygon • Know the properties of the special quadrilaterals (including diagonals)
	Assessment	Open book end of topic assessment	Closed book end of term test	Open book end of topic assessment	Open book end of topic assessment	Open book end of topic assessment	Closed book end of term test

Year	Study Modules	Autumn Term 1	Autumn Term 2	Spring Term 1	Spring Term 2	Summer Term 1	Summer Term 2
Year 8 Set 3 and UP	**Study Modules**	**Calculating Space** • Recognise that the value of the perimeter can equal the value of area • Use standard formulae for area and volume • Find missing lengths in 2D shapes when the area is known • Know that the area of a trapezium is given by the formula area = ½ × (a + b) × h = $\left(\frac{a+b}{2}\right)h = \frac{(a+b)h}{2}$ • Calculate the area of a trapezium • Know the vocabulary of circles • Know that the number π (pi) = 3.1415926535… • Know the formula circumference of a circle = 2πr = πd • Calculate the circumference of a circle when radius (diameter) is given • Know the formula area of a circle = πr^2 • Calculate the area of a circle when radius (diameter) is given • Understand the meaning of surface area • Find the surface area of cuboids (including cubes) when lengths are known	**Straight Line Graphs** • Know that graphs of functions of the form y = mx + c, x ± y = c and ax ± by = c are linear • Plot graphs of functions of the form y = mx + c • Plot graphs of functions of the form ax ± by = c • Draw and recognise the graphs of y = c and x = c • Understand the concept of the gradient of a straight line • Write the equation of a line parallel to the x-axis or the y-axis • Draw a line parallel to the x-axis or the y-axis given its equation • Identify the lines y = x and y = -x • Draw the lines y = x and y = -x • Find the gradient of a straight line on a unit grid • Find the y-intercept of a straight line • Sketch a linear graph • Plot and interpret graphs of piece-wise linear functions in real contexts • Plot and interpret distance-time graphs (speed-time graphs)	**Algebra Manipulation 3** • Expand and simplify an expression (e.g. 3(x+2) +4(x+5)) • Identify common factors (numerical and algebraic) of terms in an expression • Factorise an expression by taking out common factors • Be aware of common scientific formulae • Substitute negative numbers into formulae • Know the meaning of the 'subject' of a formula • Change the subject of a formula when one step is required Change the subject of a formula when a two steps are required	**Presentation of Data** • Know the meaning of categorical data • Know the meaning of discrete data • Interpret and construct frequency tables • Construct and interpret pictograms (bar charts, tables) and know their appropriate use • Construct and interpret comparative bar charts • Interpret pie charts and know their appropriate use • Construct pie charts when the total frequency is not a factor of 360 • Choose appropriate graphs or charts to represent data Construct and interpret vertical line charts **Number 2** • Multiply and divide a number positive integer by a power of 10 • Multiply and divide a decimal by a power of 10 • Use knowledge of place value to multiply with decimals	**Sequences 2** • Generate a sequence from a term-to-term rule • Understand the meaning of a position-to-term rule • Use a position-to-term rule to generate a sequence • Find the position-to-term rule for a given sequence (nth term) • Use algebra to describe the position-to-term rule of a linear sequence (the nth term) Use the nth term of a sequence to deduce if a given number is in a sequence **Constructions 2** • Use compasses to construct clean arcs • Use ruler and compasses to construct an equilateral triangle • Use ruler and compasses to construct an isosceles triangle • Use ruler and compasses to construct a right angled triangle • Use ruler and compasses to construct the	**Measuring Data** • Understand the mode and median as measures of typicality (or location) • Find the mode of set of data • Find the median of a set of data • Find the median of a set of data when there are an even number of numbers in the data set • Use the mean to find a missing number in a set of data • Calculate the mean from a frequency table • Find the mode from a frequency table • Find the median from a frequency table • Understand the range as a measure of spread (or consistency) • Calculate the range of a set of data • Analyse and compare sets of data Appreciate the limitations of different statistics (mean, median, mode, range) **Probability** • Know that probability is a way of measuring likeliness

		• Calculate the volume of cubiods (including cubes) when lengths are known Find missing lengths in 3D shapes when the volume or surface area is known **Straight Line Graphs** • Know that graphs of functions of the form y = mx + c, x ± y = c and ax ± by = c are linear • Plot graphs of functions of the form y = mx + c • Plot graphs of functions of the form ax ± by = c • Draw and recognise the graphs of y = c and x = c • Understand the concept of the gradient of a straight line • Write the equation of a line parallel to the x-axis or the y-axis • Draw a line parallel to the x-axis or the y-axis given its equation • Identify the lines y = x and y = -x • Draw the lines y = x and y = -x • Find the gradient of a straight line on a unit grid • Find the y-intercept of a straight line • Sketch a linear graph • Plot and interpret graphs of piece-wise linear functions in real contexts • Plot and interpret distance-time graphs (speed-time graphs)	Find approximate solutions to kinematic problems involving distance and speed **Solving Equations 2** • Solve linear equations with the unknown on both sides when the solution is a whole number • Solve linear equations with the unknown on both sides when the solution is a negative number • Solve linear equations with the unknown on both sides when the equation involves brackets • Recognise that the point of intersection of two graphs corresponds to the solution of a connected equation Check the solution to an equation by substitution **Transformations** • Carry out a reflection in a diagonal mirror line (45° from horizontal) • Reflect shapes in the x and y axis • Find and name the equation of the mirror line for a given reflection • Describe a translation as a 2D vector • Understand the concept and language of rotations		• Use knowledge of place value to divide a decimal • Use knowledge of place value to divide by a decimal • Use knowledge of inverse operations when dividing with decimals • Be fluent at multiplying a three-digit or a two-digit number by a two-digit number • Be fluent when using the method of short division • Know the order of operations for the four operations • Use brackets in problem involving the order of operations • Understand and apply the fact that addition and subtraction have equal priority • Understand and apply the fact that multiplication and division have equal priority • Approximate by rounding to any number of decimal places • Know how to identify the first significant figure in any number • Approximate by rounding to the first significant figure in any number • Understand estimating as the process of finding a rough value of an answer or calculation • Use estimation to predict the order of magnitude of the	perpendicular bisector of a line segment • Use ruler and compasses to bisect an angle • Use a ruler and compasses to construct a perpendicular to a line from a point (at a point) • Understand the meaning of locus (loci) • Know how to construct the locus of points a fixed distance from a point (from a line) • Identify when to use the locus of points a fixed distance from a point (from a line) • Identify when a perpendicular bisector is needed to solve a loci problem Identify when an angle bisector is needed to solve a loci problem	• Know and use the vocabulary of probability • Understand the use of the 0-1 scale to measure probability • Assess likeliness and place events on a probability scale • List all the outcomes for an experiment • Identify equally likely outcomes • Work out theoretical probabilities for events with equally likely outcomes • Know how to represent a probability • Recognise when it is not possible to work out a theoretical probability for an event • Know that the sum of probabilities for all outcomes is 1 • Apply the fact that the sum of probabilities for all outcomes is 1 • List all elements in a combination of sets using a Venn diagram • List outcomes of an event systematically • Use a table to list all outcomes of an event • List outcomes of an event using a grid (two-way table) • Calculate probabilities using a possibility space • Use theoretical probability to calculate expected outcomes • Use experimental probability to calculate expected outcomes

		• Find approximate solutions to kinematic problems involving distance and speed	• Carry out a rotation using a given angle, direction and centre of rotation • Describe a rotation using mathematical language • Use the centre and scale factor to carry out an enlargement of a 2D shape with a fractional scale factor • Find the scale factor of an enlargement with fractional scale factor • Find the centre of an enlargement with fractional scale factor • Perform a sequence of transformations on a 2D shape		solution to a (decimal) calculation • Estimate calculations by rounding numbers to one significant figure • Use cancellation to simplify calculations Use inverse operations to check solutions to calculations • Understand the meaning of prime factor • Write a number as a product of its prime factors • Use a Venn diagram to sort information • Use prime factorisations to find the highest common factor of two numbers • Use prime factorisations to find the lowest common multiple of two numbers • Know how to identify any significant figure in any number • Approximate by rounding to any significant figure in any number • Write a large (small) number in standard form • Interpret a large (small) number written in standard form		
	Assessment	Open book end of topic assessment	Closed book end of term test	Open book end of topic assessment	Open book end of topic assessment	Open book end of topic assessment	Closed book end of term test