YEAR GROUP OVERVIEW - Maths

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
White Rose Maths - Year 7	**Sequences**	**Place value and ordering integers and decimals**	**Solve problems with addition & subtraction**	**Four operations with directed number**	**Constructing, measuring and using geometric notation**	**Developing number sense**
	• Describe and continue sequences in diagram and number forms, both linear and non-linear Compare numerical and graphical forms	• Recognise and use integer place value up to one billion. • Recognise and use decimal place value to at least hundredths • Work out intervals and use number lines • Compare and order numbers • Use ordered lists to find range and the median of a set of data • Round numbers to positive powers of ten Round numbers to one significant figure	• Use mental and formal written methods of addition with integers and decimals, including choosing the most appropriate method Solve problems in the context of bar charts and line charts	• Order directed numbers, both in contextualised and abstract situations • Revisit four operations to include directed number • Use a calculator with directed number • Solve two-step equations (with and without a calculator) Use the order of operations	• Understand and use letting and labelling notation for lines and angles • Draw and measure lines and angles accurately • Classify angles • Identify and draw parallel line and perpendicular lines • Recognise types of triangle, quadrilateral and other polygons • Construct triangles given SSS, SAS and ASA Draw and interpret pie charts	• Mental arithmetic strategies • Use known facts to derive other facts • Evaluate an algebraic expression given related facts Use estimation
	Understand and use algebraic notation	**Fraction, decimal and percentage equivalence**	**Solving problems with multiplication and division**	**Addition and subtraction of fractions**	**Developing geometric reasoning**	**Sets and probability**
	• Use single function machines and	• Represent tenths and hundredths on	• Multiply by 10, 100, 1000, 0.1 and 0.01, and	• Represent tenths and	• Calculate and use angles at a point, angles on	• Understand and use set notation

	series of two function machines with numbers, bar models and letters. • Use and interpret algebraic notation • Understand and use inverse operations • Form and substitute into expressions, including to generate sequences. Represent functions graphically	diagrams and number lines • Interchange between fractions, decimals and percentages for multiples of one tenths and one quarter • Interpret pie charts • Equivalent fractions Convert between other fractions, decimals and percentages	convert metric units • Use mental and formal written methods of multiplication and division • Find the HCF and LCM of small numbers • Evaluate the areas of triangles, rectangles and parallelograms • Find the mean of a set of numbers • Find simple fractions and percentages of amounts Begin to use the order of operations	hundredths on diagrams and number lines • Convert mixed numbers and improper fractions • Add and subtract fractions with the same denominator, one denominator a multiple of the other and different denominators Add and subtract fractions and decimals	a straight line and vertically opposite angles Calculate the missing angles in triangles and quadrilaterals	• Draw and interpret Venn diagrams • Understand and use the language of probability • Calculate the probability of a single event Use the sum of probabilities of an event is 1
	Equality and equivalence		**Fractions & percentages of amounts**			**Prime numbers and proof**
	• Understand equality • Use fact families • Form and solve one-step equations • Understand equivalence of algebraic expressions Collect like terms		Work out simple fractions and percentages of amount with and without a calculator			• Recognise prime, square and triangle numbers • Express a number as a product of prime factors • Powers and roots • Make and test conjectures Understand and use counterexamples

YEAR GROUP OVERVIEW - Maths

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
White Rose Maths - Year 8	**Ratio and scale**	**Working in Cartesian plane**	**Brackets, equations and inequalities**	**Fractions and percentages**	**Angles in parallel lines and polygons**	**Data handling cycle**
	• Understand ratio and its link to multiplication • Use ratio notation • Reduce ratios to simplest form • Solve ratio problems • Calculate the circumference of a circle	• Plot and interpret straight line graphs • Understand and use the equations of a straight line, including lines parallel to the axes • Make links between direct proportion and straight lines of the form $y = kx$ • Model situations by translating them into expressions, formulae and graphs	• Expand, and factorise into, single brackets • Form and use expressions, formulae and identities • Form and solve equations and inequalities with and without brackets • Distinguish between equations, expressions, formulae and identities	• Develop understanding of fractions, decimals and percentages • Evaluate percentage increases and decreases • Use multipliers to solve percentage problems • Express one number as a percentage of another	• Review y7 angle rules • Understand and use parallel lines and angles • Revisit geometric notation • Work out angles in special quadrilaterals • Find and use sum of interior and exterior angles in polygon • Prove simple geometric facts	• Understand and use primary and secondary source of data • Collect data, including questionnaires • Interpret and construct statistical diagrams, including multiple bar charts • Construct and interpret pie charts • Compare distributions using charts • Identify misleading graphs
	Multiplicative change	**Representing data**	**Sequences**	**Standard form**	**Area of trapezia and circles**	**Measure and location**
	• Use scale factors, linking ratio, to solve simple direct proportion problems • Convert between currencies,	• Draw and interpret scatter graphs • Understand correlation • Draw and use lines of best fit • Understand grouped and	• Generate sequences using more complex rules e.g. with brackets and squared terms, both in words and algebraically	• Convert between ordinary and standard form • Compare numbers given in standard form • Calculate with numbers given	• Review area of shapes covered in y7 • Calculate the area of a trapezium • Calculate the area of a circle,	• Revisit median and mean, including finding the total given the mean • Find the mean of grouped data • Work out mode and modal class

	including using graphs • Draw and interpret scale diagrams and maps	ungrouped, discrete and continuous data • Design and use one and two-way tables		in standard form, with and without a calculator	and parts of a circle • Use of significant figures • Calculate the area of compound shapes	• Choose the appropriate average • Compare distributions using measures
	Multiplying and dividing fractions	**Tables & probability**	**Indices**	**Number sense**	**Line symmetry and reflection**	**Straight line graphs**
	• Multiply and divide a fraction by an integer • Multiply and divide a fraction by a fraction • Understand and use reciprocal	• List outcomes using sample space diagrams for one and two events • Find probabilities using tables and Venn diagrams	• Form expressions using indices • Understand and use the addition and subtraction rules	• Develop mental strategies • Convert between metric measures and units • Estimation, including rounding to a given number of decimal places • Use the order of operations	• Recognise line symmetry in polygons and other shapes • Reflect shapes in horizontal, vertical and diagonal lines	• Interpret straight line graphs • Find and use equation of a straight line

YEAR GROUP OVERVIEW - Maths

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
White Rose Maths - Year 9	**Straight line graphs**	**Three-dimensional shapes**	**Using percentages**	**Rotation and translation**	**Solving ratio & proportion problems**	**Algebraic representation**
	• Revisit straight line graphs y8 • Reduce equations to the form $y = mx + c$ • Compare to linear sequences and find the rule for the n^{th} term	• Understand the language of faces, edges and vertices • Know the names of common prisms and non-prisms • Identify 2-D shapes within 3-D shapes • Work out the volume and surface area of cuboids and cylinders • Work out the volume of any prism • Work out missing lengths given area and/or volume	• Revisit percentage increase and decrease • Use percentages over 100% • Find percentage changes • Use multipliers in a variety of contexts • Solve “reverse percentage” problems	• Identify the order of rotational symmetry of a shape • Find the result of rotating a shape • Translate points and shapes by a given vector • Understand variance and invariance in the context of transformations	• Direct proportion problems and graphs • Conversion graphs • Solve ratio problems given the whole or a part • Simple inverse proportion • Unit pricing problems (‘best buys’)	• Drawing and reading from quadratics • Interpret other graphs e.g. reciprocal. piece-wise • Represent inequalities
	Forming and solving equations	**Construction and congruency**	**Maths and money**	**Pythagoras’ theorem**	**Rates**	**Congruence, similarity and enlargement**
	• Revisit and extend to equations and inequalities with unknown on both sides using all previous contexts: angles,	• Construct 3-D shapes from nets, and construct the net of a given 3-D shape	• Explore financial mathematics including: Bills and bank statements, Interest, Unit pricing (best buy)	• Identify the hypotenuse of a right-angled triangle • Determine whether a triangle is right-angled	• Work with speed, distance, time • Solve problems involving density • Work with compound units	• Understand the difference between congruence and similarity • Enlarge a shape about a given point,

	probability, area etc • Change the subject of a formula	• Construct and use scale drawings • Construct perpendicular and bisectors • Understand congruency • Exploring congruency via construction		• Calculate missing sides in right-angled triangles		understand and use similarity • Find missing sides in similar shapes including pairs of similar triangles • Understand and use the conditions for a pair of congruent triangles
	Testing conjecture	**Number**	**Deduction**	**Enlargement and similarity**	**Probability**	**Trigonometry**
	• Test conjectures in a wide range of context e.g. Sums and products of odd and even numbers, is a given number in a sequence? Is this shape…? Are these lines parallel? What would happen if…?	• Revisit types of number – extend to include rational and real numbers • Revisit fraction arithmetic • Extend knowledge of HCF and LCM • Revisit standard form	• Revisit angle rules, including within special quadrilaterals • Find angles within algebraic methods • Use chains of reasoning to evaluate angles	• Enlarge shapes by a positive scale factor, including from a given point • Calculate the lengths of missing sides in similar shapes	• Relative frequency • Expected number of outcomes • Independent events	• Understand trigonometric ratios • Work out missing lengths and angles in right-angled triangles • Know and use exact values of key angles

PONTEFRACT ACADEMIES TRUST

YEAR 10 OVERVIEW Term 1 Maths

1-2	2-4	3-5	4-7	6-9
Four rules (Place value, addition,subtraction, multiplication, division)	Four rules (Place value, addition,subtraction, multiplication, division) Definitions, terms & Prime numbers	Definitions, terms & Prime numbers HCF/LCM	HCF/LCM Index notation/Calculations & estimations with powers and roots/laws of indices	HCF/LCM Index notation/Calculations & estimations with powers and roots/laws of indices
Subsitute numerical values into formulae & expressions	Index notation/laws of indices Substitute numerical values into formulae & expressions	Index notation/Calculations & estimations with powers and roots/laws of indices Standard form	Standard form Substitute numerical values into formulae & expressions	Standard form Substitute numerical values into formulae & expressions
Collecting like terms in sums, difference product & quotient	Collecting like terms in sum, difference, product, quotient Multiply out brackets Factorising	Substitute numerical values into formulae & expressions Multiply out brackets Factorising	Multiply out brackets Factorising	Multiply out brackets Factorising Linear equations in one unknown
Linear equations in one unknown	Linear equations in one unknown	Linear equations in one unknown Change the subject of a formula	Linear equations in one unknown Change the subject of a formula	Change the subject of a formula
Perimeter of rectalinear shapes & Area calculations	Perimeter of rectalinear shapes & Area calculations	Perimeter of rectalinear shapes & Area calculations	Perimeter of rectalinear shapes & Area calculations Surface area, Volume	Perimeter of rectalinear shapes & Area calculations Surface area, Volume
Volume	Surface area, Volume	Surface area, Volume	Decimals and Fractions Calculations with fractions	Decimals and Fractions Calculations with fractions

YEAR OVERVIEW Term 2 Maths

1-2	2-4	3-5	4-7	6-9
Four rules (Types of number, order of operations)	Four rules (Types of number, order of operations)	Percentage Conversions Equivalent fractions, Ordinality	Manipulating surds	Manipulating surds
Percentage Conversions Equivalent fractions, Ordinality	Percentage Conversions Equivalent fractions, Ordinality	Estimation Upper & lower bounds	Estimation Upper & lower bounds (Calculations)	Upper & lower bounds (Calculations)
Decimal and fractions Rounding	Decimal and fractions Calculations with fractions	Decimal and fractions Calculations with fractions	Categorical & numerical data Bivariate data	Categorical & numerical data Bivariate data
Categorical & numerical data	Categorical & numerical data	Categorical & numerical data	Grouped data	Grouped data
Categorical & numerical data	Categorical & numerical data Bivariate data	Categorical & numerical data Bivariate data	Angles Circle theorems	Angles Circle theorems
Symmetry	Symmetry properties of triangles & quadrilaterals	Angles	Circle theorems	Circle theorems (proof)

YEAR OVERVIEW Term 3 Maths

1-2	2-4	3-5	4-7	6-9
Angles	Angles	Angles	Algebraic fractions Simultaneous equations	Algebraic fractions
Properties of triangles and quadrilaterals	Angles	Linear equations in one unknown (form & solve)	Simultaneous equations	Simultaneous equations
Formulate algebraic expressions	Formulate algebraic expressions	Simultaneous equations	Summary Statistics	Summary Statistics
Linear equations in one unknown (form & solve)	Linear equations in one unknown (form & solve)	Summary Statistics	Summary Statistics	Plane Isometric transformations
Summary Statistics	Summary Statistics	Summary Statistics	Plane Isometric transformations	Graphs of equations and functions Straight line graphs Paralllel & Perpendicular
Summary Statistics	Summary Statistics	Plane Isometric transformations	Graphs of equations and functions Straight line graphs Paralllel & Perpendicular	Equation of a circle (equation of tangent)

YEAR OVERVIEW Term 4 Maths

1-2	2-4	3-5	4-7	6-9
Plane Isometric transformations	Plane Isometric transformations	Plane Isometric transformations	Enumeration Venn diagrams Tree diagrams	Enumeration Venn diagrams Tree diagrams
Plane Isometric transformations	Plane Isometric transformations	Graphs of equations and functions Straight line graphs Paralllel & Perpendicular*	Percentage change Growth and decay	Percentage change Growth and decay
Graphs of equations and functions	Graphs of equations and functions	Venn Diagrams Tree Diagrams	Equivalent ratio Division in a ratio Ratio and fraction	Equivalent ratio Division in a ratio Ratio and fraction
Probability scale, relative frequency and probability, Equally likely outcomes and probability	Probability scale, relative frequency and probability, Equally likely outcomes and probability	Percentage change Growth and decay	Direct proportion Inverse proportion	Direct proportion Inverse proportion
Sample Space, Addition law of probability	Sample Space, Addition law of probability	Percentage change Growth and decay	Algebric proof	Algebric proof

YEAR OVERVIEW Term 5 Maths

1-2	2-4	3-5	4-7	6-9
Percentage calculations	Percentage calculations	Equivalent ratio Division in a ratio	Ruler and compass constructions Maps and scale drawings (bearings)	Ruler and compass constructions Maps and scale drawings (bearings)
Percentage change	Percentage change	Ratio and fraction	Enlargement, Similar shapes	Enlargement, Similar shapes
Equivalent ratio	Equivalent ratio	Direct proportion Inverse proportion	Compound units Kinamatic formula	Compound units* Kinamatic formula
Division in a ratio	Division in a ratio	Plans and elevation Ruler and compass constructions	Similar triangles/ congruence Sequences	Sequences Functions
Ratio and proportion problems	Ratio and proportion problems	Enlargement Similar shapes	Circles* (Circle Nomenlature)	Circles* (Circle Nomenlature)
Plans and elevations(2D & 3D shapes) Maps and scale drawings	Plans and elevations(2D & 3D shapes) Maps and scale drawings	Maps and scale drawings (bearings)	Circles*	Plane vector geometry
Enlargement, units of measure.	Enlargement, Similar shapes	Similar triangles/ congruence Sequences	Plane vector geometry	Iterative process

YEAR OVERVIEW Term 6 Maths

1-2	2-4	3-5	4-7	6-9
Sequences	Sequences	Compound units Kinamatic formula	Pythagoras Trigonometry in right-angled triangles	Pythagoras Trigonometry in right-angled triangles*
Circles (Circle Nomenlature)	Similar triangles/ Congruence	Circles* (Circle Nomenlature)	Exact Trig values Sine & Cosine rule (area of a triangle)	Exact Trig values Sine & Cosine rule (area of a triangle)
Circles	Circles (Circle Nomenlature)	Plane vector geometry Inequalities	Sine & Cosine rule (area of a triangle)	Inequalities*
Calculations with fractions	Inequalities	Pythagoras theorem Trigonometry in right-angled triangles (exact Trig values)	Inequalities*	Quadratic equations Complete the square
Inequalities	Pythagoras	Pythagoras theorem Trigonometry in right-angled triangles(bearings)	Quadratic equations Complete the square	Gradients Areas
Interpreting graphs	Compound units	Quadratic equations	Equation of a circle	Transformation of curves and their equations

YEAR OVERVIEW Maths

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
1-2	**Number** • Four Rules *(Place value, addition, subtraction, multiplication, division)*	**Number** • Four Rules *(Types of number, order of operations negative numbers)* • Percentage conversion, Equivalent fractions, Ordinality *(Convert between fractions decimals and percentages, recognise and use equivalence and ordering)* • Decimals Fractions *(Express simple fractions as terminating decimals or vice versa without a calculator. Carry out calculations involving decimals)* • Rounding *(Round numbers to the nearesy whole number, ten, hundred etc or to a given number of significant figures or decimal places)*	**Geometry & Measure** • Angles *(To know and use angle facts involving points, lines and triangles)* • Properties of triangles & Quadrilaterals *(Know basic properties different types of triangles and quadrilaterals. Give geometrical reasons to justify these properties)*	**Geometry & Measure** • Plane Isometric transformation *(Apply and describe rotations, reflections and translations)*	**Number** • Percentage calculations *(Understand percentage is number of parts of per hundred. Calculate a percentage of a quantity and express one quantity as a percentage of another with or without a calculator)* • Percentage change *(Increase or decrease a quantity by a percentage, including decimal or fractional multipliers)* • Equivalent ratio *(Find the ratio of quantities in the form a:b and simplify)* • Division in a ratio *(Split a quantity into two parts given the ratio of parts. Express the division of a quantity into two parts as a ratio)* • Ratio & Proportion problems *(Solve ratio and proportion problems such as adapt a recipe)*	**Algebra** • Sequences *(Generate a sequence using term-to-term and position-to-term rule for an arithmetic sequence. Generate a sequence given a formula for the nth term.)* • Circles (Nomenclature) *(Understand and use the terms centre, radius, chord, diameter, circumference, tangent, arc, sector and segment. Know and apply the formual for circumference= $2\pi r=\pi d$ Know and apply the formula for area πr^2)*
	Algebra • Substitute numerical values into formulae & expressions *(substitute positive numbers into simple expressions and formulae to find the value of the subject)* • Collecting like terms in sums and difference *(Simplify algebraic expressions by collecting like terms. Simplify algebraic expressions involving product and quotient)* • Linear equations in one unknown *(Solve linear equations in one unknown algebraically)*	**Statistics** • Categorical and numerical data *(Interpret and construct charts appropriate to the data type. Design tables to classify data. Inperpret and construct line graphs for time series data)*	**Algebra** • Formulate algebraic expressions *(Formulate simple formulae and expressions from real-world context)* • Linear equations in one unknown (form & solve) *(Set up and solve linear equations in mathematical and non-mathematical contexts)*	**Algebra** • Graphs of equations and functions *(Use a table of values to plot linear, graphs. Recognise and sketch graphs)*	**Geometry & Measure** • Plans & Elevations (2D & 3D shapes) Maps & Scale drawings) *(Interpret and construct plans and elevaltions of simple 3D solids and use representations of solids from plans and elevations. Use the scale of maps. Construct and interpret scale drawings)* • Enlargement / Units of measure *(Enlarge a simple shape from a given centre using a whole number scale factor and identify the scale factor of an*	**Number** • Calculations with fractions *(add, subtract, multiply and divide with fractions)*
	Geometry & Measure	**Geometry & Measure**	**Statistics**	**Probability**		**Algebra**

	• Perimeter of rectilinear shapes & area calculations *(Calculate the perimeter of rectalinear and composite shapes. Know and apply formulae to work out the area of 2D shapes)* • Volume *(Calculate the volume of cuboids and other right prisms)*	• Symmetry *(Identify reflection and rotation symmetries of triangles, quadrilaterals and other polygons)*	• Summary Statistics *(Calculate the mean, mode, median and range for ungrouped data.)*	• Probability scale, relative frequency and probability *(Use the 0-1 probability scale as a measure of likelihood of random events. Use relative frequency as an estimate of probability)* • Equally likely outcomes and probability *(Calculate probabilities expressed as fractions or decimals. Calculate probabilties of simple combined events. Use probabilites to calculate expected outcomes in repeated experiments)* • Sample space/Addition law of probability. *(Use tables and grids to list the outcomes of single events and simple combinations of events and calculate theoretical probabilities. Use p(A) + P(not A) = 1)*	*enlargement, use and covert standard units of measurement for length, volume, mass, time and money)*	• Inequalities *(Understand and use the symbols <, ≤, > and ≥. Solve linear inequalites in one variable expressing solutions on a number line)* • Interpreting graphs *(Construct and interpret graphs in real-world context such as distance-time, temperature conversion)*

YEAR GROUP OVERVIEW Maths

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
2-4	**Number**	**Number**	**Geometry & measure**	**Geometry & measure**	**Number**	**Algebra**
	• Four Rules *(Place value, addition, subtraction, multiplication, division)* • Definitions, terms & prime numbers *(understand & use terms such as multiple and factor)* • Index notation/laws of indices *(Use positive integer indices as well to know and apply the laws of indices for product and quotient)*	• Four rules *(Types of number, order of operations negative numbers)* • Percentage conversions Equivalent fractions Ordinality. *(Convert between fractions decimals and percentages, recognise and use equivalence and ordering)* • Decimal fractions *(Express simple fractions as terminating decimals or vice versa without a calculator. Carry out calculations involving decimals)* • Calculations with fractions *(add, subtract, multiply and divide with fractions)*	• Angles *(To know and use angle facts involving points, lines and triangles) (To know and use angle facts involving quadrilaterals, intersecting & parallel lines)*	• Plane isometric transformations *(Apply and describe rotations, reflections and translations)*	• Percentage calculations *(Understand percentage is number of parts of per hundred. Calculate a percentage of a quantity and express one quantity as a percentage of another with or without a calculator)* • Percentage change *(Increase or decrease a quantity by a percentage, including decimal or fractional multipliers)* • Equivalent ratios *(Find the ratio of quantities in the form a:b and simplify)* • Division in a ratio *(Split a quantity into two parts given the ratio of parts. Express the division of a quantity into two parts as a ratio. Calculate one quantity from another given the ratio of the two quantities)* • Ratio and proportion problems *(Solve ratio and proportion problems such as adapt a recipe)*	• Sequences *(Generate a sequence using term-to-term and position-to-term rule for an arithmetic sequence. Generate a sequence given a formula for the nth term. Find a formula for a linear, sequences)*
	Algebra	**Statistics**	**Algebra**	**Algebra**	**Geometry & measure**	**Geometry & measure**
	• Substitute numerical values into formulae & expressions *(substitute positive numbers into simple expressions and formulae to find the value of the subject)* • Collecting like terms sum, difference, product & quotient *(Simplify algebraic expressions by collecting like terms. Simplify algebraic expressions involving product and quotient)* • Multiplying out brackets/factorising *(Simplify algebraic expressions by multiplying*	• Categorical & numerical data *(Interpret and construct charts appropriate to the data type. Design tables to classify data. Inperpret and construct line graphs for time series data)* • Bivariate data *(Plot an interpret scatter diagrams. Interpret correlation with context and appreciate the distinction between correlation and causation. Draw a line fo best fit and use it to make predictions)*	• Formulate algebraic expressions *(Formulate simple formulae and expressions from real-world context)* • Linear equations in one unknown (form & solve) *(Set up and solve linear equations in mathematical and non-mathematical contexts)*	• Graphs of equations & functions *(Use a table of values to plot linear, quadratic graphs. Recognise and sketch graphs)*	• Plans & Elevations (2D & 3D shapes) maps and scale drawings *(Interpret and construct plans and elevaltions of simple 3D solids and use representations of solids from plans and elevations. Use the scale of maps. Construct and interpret scale drawings)* • Enlargement / Similar shapes *(Enlarge a simple shape from a given centre using a whole number scale*	• Similar triangles/ Congruence *(Identify and prove that two triangles are similar. Identify and prove that two triangles are congruent using the cases: 3 sides (SSS), 2 angles one side (ASA), 2 sides one angle (SAS), right-angle hypotenuse side (RHS)* • Circles (nomenclature) *(Understand and use the terms centre, radius, chord, diameter, circumference, tangent, arc, sector and segment. Know and apply*

	a sinlge term over a bracket. Factorise algebraic expressions by taking out common factors) • Linear equations in one unknown *(Solve linear equations in one unknown algebraically)*				*factor and identify the scale factor of an enlargement, Compare lengths, areas and volumes using ratio notation and scale factors)*	*the formal for circumference= $2\pi r=\pi d$ Know and apply the formula for area πr^2)*
	Geometry & Measure • Perimeter of rectilinear shapes & area calculations *(Calculate the perimeter of rectalinear and composite shapes. Know and apply formulae to work out the area of 2D shapes)* • Surface area *(Calculate the surface area of cuboids and other right prisms)* • Volume *(Calculate the volume of cuboids and other right prisms)*	**Geometry & Measure** • Symmetry properties of triangles & quadrilaterals *(Identify reflection and rotation symmetries of triangles, quadrilaterals and other polygons. Know basic properties different types of triangles and quadrilaterals. Give geometrical reasons to justify these properties)*	**Statistics** • Summary Statistics *(Calculate the mean, mode, median and range for ungrouped data. Find the modal class and calculate estimates of range, mean and median for grouped data understanding why they are estimates)*	**Probability** • Probability scale, relative frequency and probability *(Use the 0-1 probability scale as a measure of likelihood of random events. Use relative frequency as an estimate of probability)* • Equally likely outcomes and probability *(Calculate probabilities expressed as fractions or decimals. Calculate probabilties of simple combined events. Use probabilites to calculate expected outcomes in repeated experiments)* • Sample Space / Addition law of probability. *(Use tables and grids to list the outcomes for more complex combinations of events and calculate theoretical probabilities. Use p(A) + P(not A) = 1)*		**Algebra** • Inequalities *(Understand and use the symbols <, ≤, > and ≥. Solve linear inequalites in one variable expressing solutions on a number line)* **Geometry & Measure** • Pythagoras *(Know, derive and apply Pythagoras' theorem $a^2+b^2=c^2$ to find lengths in right-angled 2D figures)* • Compound units *(Use and convert compound units, Know and apply: speed = distance ÷time. Know and apply: Density = mass ÷volume)*

PONTEFRACT ACADEMIES TRUST

YEAR GROUP OVERVIEW Maths

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
3-5	**Number**	**Number**	**Geometry & Measure**	**Number**	**Number**	**Geometry & Measure**
	• Definitions, terms & Prime numbers *(understand & use terms such as multiple and factor)* • Prime factor decomposition (HCF, LCM) *(Represent numbers as a product of their prime factors and use them the identify highest common factors & lowest common multiples)* • Index notation (calculations & estimations with powers & roots) Laws of indices *(Use postive integer indices as well to know and apply the laws of indices for product and quotient. Use negative integer indices to represent reciprocals & to calculate with roots)* • Standard form *(Convert numbers to and from standard form. Interpret & order numbers expressed in standard form. Carry out calculations involving numbers expressed in standard form)*	• Percentage conversion, equivalent fractions, ordinality *(Convert between fractions decimals and percentages, recognise and use equivalence and ordering)* • Estimation *(Estimate/check, without a calculator, the result of a calculation by using suitable approximations including complex calculations involving roots)* • Upper & lower bounds *(Use inequality notation to write down an error interval for a number or measurement rounded or truncated to a given degree of accuracy)* • Decimal fractions *(Express simple fractions as terminating decimals or vice versa without a calculator. Carry out calculations involving decimals)* • Calculations with fractions *(add, subtract, multiply and divide with fractions including the use of mixed numbers & improper fraction)*	• Angles *(To know and use angle facts involving points, lines, triangles, Quadrilaterals, intersecting & parallel lines)*	• Plane isometric transformations *(Apply and describe rotations, reflections and translations)*	• Equivalent ratio *(Find the ratio of quantities in the form a:b and simplify. Find the ratio of quantities in the form 1:n)* • Division in a ratio *(Split a quantity into two parts given the ratio of parts. Express the division of a quantity into two parts as a ratio. Calculate one quantity from another given the ratio of the two quantities)* • Ratio and fraction *(Interpret a ratio of two parts as a fraction of a whole. Solve ratio and proportion problems)* • Direct proportion *(Solve simple & formal problems involving quantities in direct proportions including algebraic proportion. Recognise that if y=kx, where k is a constant, then y is proportional to x)* • Inverse proportion *(Solve simple & formal problems involving quatities in inverse proportion. Recognise that if $y = \frac{k}{x}$ where k is a constant then y is inversely proportional to x)*	• Compound units *(Use and convert compound units, Know and apply: speed = distance ÷time. Know and apply: Density = mass ÷volume Use and covert compound units in alegraic context)* • Kinematic formula *(Use $v = u + at$, $s = ut + \frac{1}{2}at^2$, $v^2 = u^2 + 2as$ where a is a constant accleration, u is initial velocity, v is final velocity, s is displacement from position when t = 0 and t is time taken)* • Circle (nomenclature) *(Understand and use the terms centre, radius, chord, diameter, circumference, tangent, arc, sector and segment. Know and apply the formual for circumference= $2\pi r = \pi d$ Know and apply the formula for area πr^2)* • Plane vector geometry *(Understand addition, subtraction and scalar multiplication of vectors. Represent a 2D vector as a column vector on a square or coordinate grid)*
	Algebra	**Statistics**	**Algebra**	**Algebra**	**Geometry & measure**	**Algebra**
	• Substitute numerical values into formulae & expressions. *(Substitute positive or negative numbers into more complex formulae including powers & roots)* • Multiplying out brackets & factorise *(Simplify algebraic expressions by multiplying a sinlge*	• Categorical & numerical data *(Interpret and construct charts appropriate to the data type. Design tables to classify data. Inperpret and construct line graphs for time series data)* • Bivariate data *(Plot an interpret scatter diagrams. Interpret correlation with context and appreciate the distinction between correlation and*	• Linear equations in one unknown (form & solve) *(Set up and solve linear equations in mathematical and non-mathematical contexts including those with the unknown on both sides of the equation)* • Simultaneous equations *(set up and solve two linear simultaneous in two variables algebraically and graphically).*	• Graphs of equations and functions *(Use a table of values to plot linear, quadratic, other polynominal and reciprocal graphs. Recognise and sketch graphs)* • Straight line graphs *(Find and interpret the gradient and intercept of straight lines, graphically and*	• Plans & elevations *(Interpret and construct plans and elevaltions of simple 3D solids and use representations of solids from plans and elevations)* • Ruler and compass constructions *(Construct perpendicular bisector and mid point of a line. Construct the bisector of an angle*	• Inequalities *(Solve linear inequalites in one variable expressing solutions on a number line)*

	term over a bracket. Factorise algebraic expressions by taking out common factors. Expand products of two binomials. Factorise quadratic expressions of the form $x^2 + bx + c$) • Linear equations in one unknown *(Solve linear equations in one unknown algebraically including those with the unknowns on both sides of the equation)* • Change of subject of a formula *(rearrange formulae to change the subject including cases where the subject appears twice or where powers or reciprocals appear)*	*causation. Draw a line fo best fit and use it to make predictions)*		*using y = mx+ c. Find the equation of a line through two given points or through one point given the gradient)* • Parallel & Perpendicular* *(Identify and find equations of parallel lines)*	*formed from two lines.Constrct a perpendicular point to a line and a line at a point. Apply ruler & compass constructions to construct figures and identify loci of points including real-world problems)*	
				Probability • Venn Diagrams *(Use and construct a Venn diagram to classify outcomes and calculate probabilities)* • Tree Diagrams *(Use tree diagrams to record the probability of successive events to solve probability problems)*	• Enlargement /Similar shapes *(Identify the centre and scale factor of an enlargment and performace an enlargement, Apply similarity to calculate unknown lengths in similar figures)* • Congruence/ Similar triangles *(Identify and prove that two triangles are similar. Identify and prove that two triangles are congruent using the cases:3 sides (SSS), 2 angles one side (ASA), 2 sides one angle (SAS), right-angle hypotenuse side (RHS)* • Maps & scale drawings *(Use the scale of maps and work with bearings. Construct and interpret scale drawings)*	**Geometry & Measure** • Pythagoras theorem *(Know, derive and apply Pythagoras' theorem $a^2 + b^2 = c^2$ to find lengths in right-angled 2D figures)* • Trigonometry in right-angled triangles (bearings) (exact Trig values) *(Know and apply the trigonometric ratios sinθ cosθand tanθ and apply them to find angles and lengths in right-angled triangles in 2D figures (Know and apply the exact value of sinθand cosθ for θ= 0°, 30°, 45°, 60°, and 90°Know and apply the exact values of tanθ for θ= 0°, 30°, 45°and 60°))*
	Geometry & Measure • Perimeter of rectilinear shapes & area calculations *(Calculate the perimeter of rectalinear and composite shapes. Know and apply formulae to work out the area of 2D shapes)* • Surface area *(Calculate the surface area of cuboids and other right prisms including composite)* • Volume *(Calculate the volume of cuboids and other right prisms including composite)*	**Geometry & Measure** • Angles *(To know and use angle facts involving points, lines, triangles, Quadrilaterals, intersecting & parallel lines)*	**Statistics** • Summary Statistics *(Calculate the mean, mode, median and range for ungrouped data. Find the modal class and calculate estimates of range, mean and median for grouped data understanding why they are estimates)* **Geometry & Measure** • Plane isometric transformations *(Apply and describe rotations, reflections and translations)*	**Number** • Percentage change *(Increase or decrease a quantity by a percentage, including decimal or fractional multipliers. Apply this to original value problems and simple interest)* • Growth and decay *(Solve problems step-bystep involvng multipliers over a given interval such as compound interest and depreciation. Express exponential growth or decay as a formula. Solve and interpret answers in growth and decay problems)*	**Algebra** • Sequences *(Generate a sequence given a formula for the nth term. Find a formula for a linear sequences)*	**Algebra** • Quadratic equations *(Solve quadratic equations with coefficient of x^2 equal to 1 by factorising)*

PONTEFRACT ACADEMIES TRUST

YEAR OVERVIEW Maths

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
4-7	**Number**	**Number**	**Algebra**	**Probability**	**Geometry & measure**	**Geometry & Measure**
	• Prime factor decomposition (HCF/LCM) *(Represent numbers as a product of their prime factors and use them the identify highest common factors & lowest common multiples)* • Index notation (calculations & estimations with powers & roots) Laws of indices *(Know and apply the laws of indices for product and quotient.Use negative integer indices to represent reciprocals, fractional powers to represent rootsand combinations of powers & roots)* • Standard form *(Convert numbers to and from standard form. Interpret & order numbers expressed in standard form. Carry out calculations involving numbers expressed in standard form)*	• Manipulation surds *(Simplify expressions with surds, including rationalising the denominator)* • Estimation *(Estimate/check, without a calculator, the result of a calculation by using suitable approximations including complex calculations involving roots)* • Upper & lower bounds (calculations) *(Calculate the upper and lower bounds of a calculation using numbers rounded to a known degree of accuracy)*	• Algebraic fractions *(simplify and manipulate algebraic fractions. Solve equations involving algebraic fractions)* • Simultaneous equations *(set up and solve two linear simultaneous in two variables algebraically and graphically). (Set up and solve two simultaneous equations including one linear & one quadratic in two variables algebraically and graphically)*	• Enumeration *(Use product rule for counting numbers of outcomes on combined events)* • Venn diagrams *(Use & construct a Venn diagram to classify outcomes and calculate probabilities including more complex problems where the structure of the diagram may not be given)* • Tree diagrams *(Use tree diagrams to record the probability of successive events to solve probability problems including conditional probabilities; structure of diagrams may not be given)*	• Ruler and compass constructions *(Construct perpendicular bisector and mid point of a line. Construct the bisector of an angle formed from two lines.Construct a perpendicular point to a line and a line at a point. Apply ruler & compass constructions to construct figures and identify loci of points including real-world problems)* • Maps and scale drawings (bearings) *(Use the scale of maps and work with bearings. Construct and interpret scale drawings* • Enlargement / Similar shapes *(Identify the centre and scale factor, including negative scale factors, of an enlargment and performace an enlargement, including by negative scale factors. Understand and apply the relationship between lengths, areas and volumes of similar shapes)*	• Pythagoras theorem *(Know, derive and apply Pythagoras' theorem $a^2 + b^2 = c^2$ to find lengths in right-angled 2D figures. Apply Pythagoras' thoerem in more complex figures including 3D)* • Trigonometry in right-angled triangles *(Know and apply the trigonometric ratios sinθ cosθand tanθ and apply them to find angles and lengths in right-angled triangles in 2D figures. Apply the trigonometry of right-angled triangles in more complex figures including 3D)* • Exact trig values *(Know and apply the exact value of sinθand cosθ for θ= 0°, 30°, 45°, 60°, and 90°Know and apply the exact values of tanθ for θ= 0°, 30°, 45°and 60°)* • Sine & Cosine rule (area of a triangle) *(Know and apply the sine rule $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$ to find lengths and angles. Know and apply the cosine rule $a^2 = b^2 + c^2 - 2bc \cos A$ to find lengths and angles Know and apply the formula area = 1/2 ab sinC)*
	Algebra	**Statistics**	**Statistics**	**Number**	**Geometry & Measure**	**Algebra**
	• Substitute numerical values into formulae & expressions *(Substitute positive or negative numbers into more complex formulae including powers & roots)* • Multiplying out brackets & factorise *(Simplify algebraic expressions by multiplying a sinlge term over a bracket. Factorise*	• Categorical & numerical data *(Interpret and construct charts appropriate to the data type. Design tables to classify data. Inperpret and construct line graphs for time series data)* • Bivariate data *(Plot an interpret scatter diagrams. Interpret correlation with context and appreciate the distinction between correlation and causation.*	• Summary statistics *(Calculate the mean, mode, median and range for ungrouped data. Find the modal class and calculate estimates of range, mean and median for grouped data understanding why they are estimates)*	• Percentage change *(Increase or decrease a quantity by a percentage, including decimal or fractional multipliers. Apply this to original*	• Compound units *(Use and convert compound units, Know and apply: speed = distance ÷time. Know and apply: Density = mass ÷volume Use and covert compound units in alegraic context)* • Similar triangles/ Congruence *(Identify and prove that two triangles are similar. Identify and prove that two triangles are congruent*	• Inequalities *(Solve linear inequalites in one variable expressing solutions on a number line. Solve Quadratic inequalities in one variable. Solve several linear inequalites in two variables representing the solution set on a graph)* • Quadratic equations *(Know the quadratic formula. Rearrange and solve*

	algebraic expressions by taking out common factors. Expand products of two or more binomials. Factorise quadratic expressions of the form $ax^2 + bx + c$) • Linear equations in one unknown *(Set up and solve linear equations in mathematical and non-mathematical contexts including those with the unknown on both sides of the equation)* • Change subject of a formula *(rearrange formulae to change the subject including cases where the subject appears twice, where powers or reciprocals appear or cases that require the application of factorising)*	*Draw a line fo best fit and use it to make predictions)* • Grouped data *(Interpret and construct diagramss for grouped data i.e. cumulative frequency graphs and histograms)*	**Geometry & Measure** • Plane isometric transformations *(Perform a sequence of isometric transformations, reflections, rotations or translations on simple shapes. Describe the resulting transformation and the changes and invariance achieved)*	*value problems and simple interest)* • Growth & decay *(Solve problems step-by-step involvng multipliers over a given interval such as compound interest and depreciation. Express exponential growth or decay as a formula. Solve and interpret answers in growth and decay problems)* • Equivalent ratio *(Find the ratio of quantities in the form 1:n)* • Division in a ratio *(Split a quantity into two or more parts given the ratio of parts. Express the division of a quantity into two or more parts as a ratio. Calculate one quantity from another given the ratio of the two or more quantities)* • Ratio and fraction *(Interpret a ratio of two parts as a fraction of a whole. Solve ratio and proportion problems)* • Direct proportion *(Solve formal problems involving quantities in direct proportions including algebraic proportion. Formulate equations and solve problems involving a quantity in direct proportion to a power or root of another quantity)* • Inverse proportion *(Solve formal problems involving quatities in inverse proportion. Formulate equations and solve problems involving a quantity in inverse proportion to a power of root of another quantity)*	*using the cases: 3 sides (SSS), 2 angles one side (ASA), 2 sides one angle (SAS), right-angle hypotenuse side (RHS)* **Algebra** • Kinematic formula *(Use $v = u + at$, $s = ut + \frac{1}{2}at^2$, $v^2 = u^2 + 2as$ where a is a constant accleration, u is initial velocity, v is final velocity, s is displacement from position when t = 0 and t is time taken)* • Sequences *(Generate a sequence given a formula for the nth term. Find a formula for a linear, quadratic, geometric and other sequences)*	*quadratic equations by factorising or using the quadratic formula)* • Complete the square *(Complete the square on a quadratic expression e.g. $x^2 + 4x - 6 = (x+2)^2 - 10$ Solve quadratic equations by completeing the square)* • Equation of a circle *(Recognise and use the equation of a circle with a centre at the origin)*
	Geometry & Measure • Perimeter of rectilinear shapes & Area calculations *(Calculate the perimeter of rectalinear and composite shapes. Know and apply formulae to work out the area of 2D shapes)*	**Geometry & Measure** • Angles *(To know and use angle facts involving, intersecting & parallel lines, angles in polygons justiffy results in proof)*	**Algebra** • Graphs of equations and functions *(Use a table of values to plot linear, quadratic, other polynominal graphs, reciproal and exponential graphs. Recognise and sketch graphs)*	**Algebra** • Algebraic proof *(Use algebra to construct proofs and arguements such as prove that the sum of three integers is a multiple of 3)*	**Geometry & Measure** • Circle (nomenclature) *(Understand and use the terms centre, radius, chord, diameter, circumference, tangent, arc, sector and segment.Know and apply the formual for circumference= $2\pi r = \pi d$*	

	• Surface area *(Calculate the surface area of cuboids and other right prisms including composite & pyramids)* • Volume *(Calculate the volume of cuboids and other right prisms including composite & pyramids)* **Number** • Decimal calculations with fractions *(Use division to convert fractions into terminating or recurring fractions. Convert a recurring decimal to an exact fraction)* • Calculations with fractions *(add, subtract, multiply and divide with fractions including the use of mixed numbers & improper fraction)*	• Circle theorems (*Apply and prove a series of theorems such as alternate segement theorem and angles in the same segment)*	• Straight line graphs *(Find and interpret the gradient and intercept of straight lines, graphically and using y = mx+ c. Find the equation of a line through two given points or through one point given the gradient)* • Parallel & Perpendicular *(Identify and find equations of parallel lines and perpendicular lines)*		• *Know and apply the formula for area πr^2)* • Circles *(Calculate arc length of a sector of a circle given its angle and radius. Calculate the area of a sector of a circle given its angle and radius)* • Plane vector geometry *(Understand addition, subtraction and scalar multiplication of vectors. Represent a 2D vector as a column vector on a square or coordinate grid. Use vectors in geometric arguments and proofs)*	

PONTEFRACT ACADEMIES TRUST

YEAR OVERVIEW Maths

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
6-9	**Number**	**Number**	**Algebra**	**Probability**	**Geometry & measure**	**Geometry & Measure**
	• Prime factor decomposition (HCF/LCM) *(Represent numbers as a product of their prime factors and use them the identify highest common factors & lowest common multiples)* • Index notation (calculations & estimations with powers & roots) Laws of indices *(Know and apply the laws of indices for product and quotient. Use negative integer indices to represent reciprocals, fractional powers to represent roots and combinations of powers & roots)* • Standard form *(Convert numbers to and from standard form. Interpret & order numbers expressed in standard form. Carry out calculations involving numbers expressed in standard form)*	• Manipulation surds *(Simplify expressions with surds, including rationalising the denominator)* • Upper & lower bounds (calculations) *(Calculate the upper and lower bounds of a calculation using numbers rounded to a known degree of accuracy)*	• Algebraic fractions *(simplify and manipulate algebraic fractions. Solve equations involving algebraic fractions)* • Simultaneous equations *(Set up and solve two simultaneous equations including one linear & one quadratic in two variables algebraically and graphically)*	• Enumeration *(Use product rule for counting numbers of outcomes on combined events)* • Venn diagrams *(Use & construct a Venn diagram to classify outcomes and calculate probabilities including more complex problems where the structure of the diagram may not be given)* • Tree diagrams *(Use tree diagrams to record the probability of successive events to solve probability problems including conditional probabilities; structure of diagrams may not be given)*	• Ruler and compass constructions *(Construct perpendicular bisector and mid point of a line. Construct the bisector of an angle formed from two lines. Constrct a perpendicular point to a line and a line at a point. Apply ruler & compass constructions to construct figures and identify loci of points including real-world problems)* • Maps and scale drawings (bearings) *(Use the scale of maps and work with bearings. Construct and interpret scale drawings* • Enlargement/Similar shapes *(Identify the centre and scale factor, including negative scale factors, of an enlargment and performace an enlargement, including by negative scale factors. Understand and apply the relationship between lengths, areas and volumes of similar shapes)*	• Pythagoras theorem *(Know, derive and apply Pythagoras' theorem $a^2+b^2=c^2$ to find lengths in right-angled 2D figures. Apply Pythagoras' thoerem in more complex figures including 3D)* • Trigonometry in right-angled triangles *(Know and apply the trigonometric ratios $\sin\theta$ $\cos\theta$and $\tan\theta$ and apply them to find angles and lengths in right-angled triangles in 2D figures. Apply the trigonometry of right-angled triangles in more complex figures including 3D)* • Exact trig values *(Know and apply the exact value of $\sin\theta$ and $\cos\theta$ for θ= 0°, 30°, 45°, 60°, and 90°Know and apply the exact values of $\tan\theta$ for θ= 0°, 30°, 45°and 60°)* • Sine & Cosine rule (area of a triangle) *(Know and apply the sine rule $\frac{a}{\sin A}=\frac{b}{\sin B}=\frac{c}{\sin C}$ to find lengths and angles. Know and apply the cosine rule $a^2=b^2+c^2-2bc\cos A$ to find lengths and angles. Know and apply the formula area = 1/2 ab sinC)*
	Algebra	**Statistics**	**Statistics**	**Number**	**Geometry & Measure**	**Algebra**
	• Substitute numerical values into formulae & expressions *(Substitute positive or negative numbers into more complex formulae including powers & roots)* • Multiplying out brackets & factorise *(Simplify algebraic*	• Categorical & numerical data *(Interpret and construct charts appropriate to the data type. Design tables to classify data. Inperpret and construct line graphs for time series data)* • Bivariate data *(Plot an interpret scatter diagrams. Interpret correlation with context and appreciate the*	• Summary statistics *(Calculate estimates of mean, median, mode, range, quartiles and interquartile range from graphical representation of grouped data. Draw & interpret box plots using median and interqurtile range to compare distributions)*	• Percentage change *(Increase or decrease a quantity by a percentage, including decimal or fractional multipliers. Apply this to original value problems and simple interest)*	• Compound units *(Use and convert compound units, Know and apply: speed = distance ÷ time. Know and apply: Density = mass ÷volume Use and covert compound units in alegraic context)*	• Inequalities *(Solve linear inequalites in one variable expressing solutions on a number line. Solve Quadratic inequalities in one variable. Solve several linear inequalites in two variables representing the solution set on a graph)*

	expressions by multiplying a sinlge term over a bracket. Factorise algebraic expressions by taking out common factors. Expand products of two or more binomials. Factorise quadratic expressions of the form $ax^2 + bx + c$) • Linear equations in one unknown *(Set up and solve linear equations in mathematical and non-mathematical contexts including those with the unknown on both sides of the equation)* • Change subject of a formula *(rearrange formulae to change the subject including cases where the subject appears twice, where powers or reciprocals appear or cases that require the application of factorising)*	*distinction between correlation and causation.* *Draw a line fo best fit and use it to make predictions)* • Grouped data *(Interpret and construct diagramss for grouped data i.e. cumulative frequency graphs and histograms)*	**Geometry & Measure** • Plane Isometric transformations *(Perform a sequence of isometric transformations, reflections, rotations or translations on simple shapes. Describe the resulting transformation and the changes and invariance achieved)*	• Growth & decay *(Solve problems step-by-step involvng multipliers over a given interval such as compound interest and depreciation. Express exponential growth or decay as a formula. Solve and interpret answers in growth and decay problems)* • Equivalent ratio *(Find the ratio of quantities in the form 1:n)* • Division in a ratio *(Split a quantity into two or more parts given the ratio of parts. Express the division of a quantity into two or more parts as a ratio. Calculate one quantity from another given the ratio of the two or more quantities)* • Ratio and fraction *(Interpret a ratio of two parts as a fraction of a whole. Solve ratio and proportion problems)* • Direct proportion *(Solve formal problems involving quantities in direct proportions including algebraic proportion. Formulate equations and solve problems involving a quantity in direct proportion to a power or root of another quantity)* • Inverse proportion *(Solve formal problems involving quatities in inverse proportion. Formulate equations and solve problems involving a quantity in inverse proportion to a power of root of another quantity)*	**Algebra** • Kinematic formula *(Use $v = u + at$, $s = ut + ½at^2$, $v^2 = u^2 + 2as$ where a is a constant accleration, u is initial velocity, v is final velocity, s is displacement from position when t = 0 and t is time taken)* • Sequences *(Generate a sequence given a formula for the nth term. Find a formula for a linear, quadratic, geometric and other sequences)* • Functions *(Interpret the reverse process as the 'inverse function' Interpret the succession of two functions as a 'composite function')*	• Quadratic equations *(Know the quadratic formula. Rearrange and solve quadratic equations by factorising or using the quadratic formula)* • Complete the square *(Complete the square on a quadratic expression e.g. $x^2 + 4x – 6 = (x+2)^2 - 10$ Solve quadratic equatiosn by completeing the square. Sketch graphs of quadratic functions, identifying the turing point by completing the square)* • Gradients *(Calculate or estimate gradients of graphs and interpret in contexts such as distance-time graphs, velocity-time graphs and financial graphs. Apply the concepts of average and instantaneous rate of change (gradients of chords or tangents) in numerical, algebraic and graphical contexts)* • Area *(Calculate or estimate areas under graphs and interpret in context such as distance-time graphs, velocity-time graphs and financial graphs)* Transformation of curves and their equations (*Recognise and sketch graphs of y= sinx, y = cos x and y = tanx. Identify and sketch translations and refelctions of a given graph or the graph of a given equation)*
	Geometry & Measure • Perimeter of rectilinear shapes & Area calculations *(Calculate the perimeter of rectalinear and composite shapes. Know and apply formulae to work out the area of 2D shapes)*	**Geometry & Measure** • Angles *(To know and use angle facts involving, intersecting & parallel lines, angles in polygons justiffy results in proof)* • Circle theorem (proofs) (*Apply and prove a series of theorems such as alternate segement theorem and angles in the same segment)*	**Algebra** • Graphs or equations and functions *(Use a table of values to plot linear, quadratic, other polynominal graphs, reciproal and exponential graphs. Recognise and sketch graphs)* • Straight line graphs *(Find and interpret the gradient and intercept of straight lines,*	**Algebra** • Algebraic proof (*Use algebra to construct proofs and arguements such as prove that the sum of three integers is a multiple of 3)*	**Geometry & Measure** • Circles *(Understand and use the terms centre, radius, chord, diameter, circumference, tangent, arc, sector and segment. Know and apply the formual for circumference= $2\pi r = \pi d$. Know and apply the formula for area πr^2.Calculate arc length of a sector of a circle given its angle and radius.*	

	• Surface area *(Calculate the surface area of cuboids and other right prisms including composite)* • Volume *(Calculate the volume of cuboids and other right prisms including composite & pyramids)* **Number** • Decimal calculations with fractions *(Use division to convert fractions into terminating or recurring fractions. Convert a recurring decimal to an exact fraction)* • Calculations with fractions *(add, subtract, multiply and divide with fractions including the use of mixed numbers & improper fraction)*		*graphically and using y = mx+ c. Find the equation of a line through two given points or through one point given the gradient)* • Parallel and perpendicular *(Identify and find equations of parallel lines and perpendicular lines)* • Equation of a circle *(Recognise and use the equation of a circle with a centre at the origin. Calculate the equation of a tangent to a circle at a given point)*		*Calculate the area of a sector of a circle given its angle and radius)* • Plane vector geometry *(Understand addition, subtraction and scalar multiplication of vectors. Represent a 2D vector as a column vector on a square or coordinate grid. Use vectors in geometric arguments and proofs)* **Algebra** • Iterative process *(Find approximate solutions to equations using systematic sign-change methods such as decimal search or interval bisection when there is no simple analytical method of solving them)*	