

The bigger picture topic	Step	Learning intention	Support	Interleaving topics	Corberttmaths clip numbers
<p>Rationale: This block revises and extends knowledge from Y7 & 8, with a focus on algebraic notation, substitution and linear graphs. Higher students will build upon the previously taught topics for the list below and secure new knowledge of parallel lines, perpendicular lines and finding the equation of a straight line in the form $y=mx+c$. Students should be able to move freely between numerical, algebraic and graphical representations so they can begin to model situations mathematically and express the results using a range of formal mathematical representations.</p> <p><i>Learning progression – topics students have seen that will play a vital role in understanding this block.</i> Y7: Autumn block 1 (linear sequences) Y7: Autumn block 2 (function machines, substituting into expressions, representing functions graphically) Y8: Autumn block 2 (conversion graphs) Y8: Autumn block 4 (using coordinates, plotting graphs) Y8: Spring block 1 (use formulae, expressions, identities and equations) Y8: Spring block 3 (working with indices)</p> <p><i>Higher content</i> Y7: Spring block 5 (simple algebraic fractions) Y8: Autumn block 2 (direct proportion graphs) Y8: Autumn block 4 (exploring gradients and non-linear graphs) Y8: Spring block 3 (exploring powers of powers)</p>					
<p>Key words: Parallel, perpendicular, horizontal, vertical, straight, axis, equations, graph, gradient, intercept, coordinate, linear, function, positive, negative, interpret, direct proportion, inverse proportion, asymptote, product, reciprocal, negative reciprocal</p>		<p>Explicit CEIAG links:</p> <ul style="list-style-type: none"> • Develop algebraic and graphical fluency both linear and quadratics. • Recognise, sketch and produce graphs of linear and quadratic functions and interpret their relationships. • Use linear and quadratic graphs to estimate Values. 		<p>CEIAG careers:</p> <ul style="list-style-type: none"> • Architect/Construction worker – Rise-over-run calculations must also be made when designing and building stairs. • Market Research Analyst- studies statistical data on past sales to predict future sales. 	
<p>Block 1 Straight line graphs</p>	<p>Check in. 1& 2</p>	<p>TBAT identify lines parallel to the axis and use tables of values</p>	<p>PowerPoint Presentation (whiteroseeducation.com)</p>	<p>Function machines Linear sequences</p>	<p>192,193</p>
	<p>3</p>	<p>TBAT compare gradients</p>		<p>Substitution</p>	
	<p>4</p>	<p>TBAT compare intercepts</p>			
	<p>5</p>	<p>TBAT use $y = mx+c$</p>			

	6 (H)	TBAT write equations in the form $y = mx+c$		Rearranging formulae	191
	7	TBAT find the equation of a line from a graph		Linear sequences Inverse operations	195
	8	TBAT interpret real-life graphs		Direct proportion	
	9 (H)	TBAT model real-life graphs involving inverse proportion		Inverse proportion	
	10 (H)	TBAT explore perpendicular lines		Reciprocals Multiplication Gradient	197
		TBAT complete check out			
		TBAT respond to feedback			

Rationale:
 This block revises and extends knowledge from Y7 & 8, with a focus on algebraic notation, equivalence and solving equations/inequalities. Higher students will build upon the previously taught topics for the list below and secure new knowledge in rearranging the subject of complex formulae. Students need to use algebra to generalise the structure of arithmetic and formulate mathematical relationships. They should be able to substitute values into expressions, rearrange/simplify expressions and solve equations.

Learning progression – topics students have seen that will play a vital role in understanding this block.
 Y7: Autumn block 2 (function machines, substituting into expressions, algebraic notation)
 Y7: Autumn block 3 (difference between equality and equivalence, collecting like terms, form and solve one step equations)
 Y7: Spring block 4 (substitution of directed numbers, form and solve two step equations)
 Y7: Summer block 3 (explore related algebraic expressions)
 Y8: Spring block 1 (expand single brackets, simplify expressions using brackets, solve inequalities, use formulae, expressions, identities and equations)
 Y8: Spring block 3 (working with indices)

Higher content
 Y7: Spring block 5 (simple algebraic fractions)
 Y8: Spring block 1 (expand a pair of binomials, form and solve equations and inequalities with unknowns on both sides)
 Y8: Spring block 3 (exploring powers of powers)

<p>Key words: <i>Equation, inequality, solution, unknown, inverse, solve, expand, reverse, satisfy, balance, coefficient, substitute, form, formula, subject, variable, rearrange</i></p>	<p>Explicit CEIAG links:</p> <ul style="list-style-type: none"> • Move freely between different numerical, algebraic, graphical and diagrammatic representations. • Solve linear equations. • Use and rearrange formulae. 	<p>CEIAG careers:</p> <ul style="list-style-type: none"> • Chemical Engineer- They employ the principles of advanced mathematics, biology, chemistry, and physics to solve problems that relate to the production
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Block 2 Forming & solving equations	Check in. 1 & 2	TBAT solve equations and inequalities with brackets	PowerPoint Presentation (whiteroseeducation.com)	Expanding brackets Area of quadrilaterals and triangles	178
	3	TBAT solve inequalities with negative numbers			178
	4	TBAT solve equations with unknowns on both sides		Bar models for balance method Function machines	178
	5	TBAT solve inequalities with unknowns on both sides		Perimeter of shapes	178
	6	TBAT solve equations and inequalities in mathematical contexts		Angles in parallel lines Mean and range	
	7	TBAT use formulae and equations		Substitution Rearranging formulae Algebraic notation	
	8 & 9	TBAT rearrange formulae		Inverse operations Fractions of amounts Scientific formulae	7
	10 (H)	TBAT rearrange complex formulae		Squares & square roots Expanding brackets	8
		TBAT complete check out			
	TBAT respond to feedback				

Rationale:

This block revises factors, multiples and prime number knowledge from Y7 & 8, with a focus on proof questions. Higher students will build upon the previously taught topics for the list below and secure new knowledge in identifying whether a statement is true or false and proving that statements using number and algebra are correct. Students need to use algebra to generalise the structure of arithmetic and formulate mathematical relationships. They should be able to move freely between algebraic and numerical representations and test conjectures about patterns using proofs or counterexamples.

Learning progression – topics students have seen that will play a vital role in understanding this block.

Y7: Autumn block 1 (recognise linear and non-linear sequences)

Y7: Autumn block 2 (function machines, substituting into expressions, algebraic notation, generate sequences from algebraic rules)

Y7: Autumn block 3 (difference between equality and equivalence, collecting like terms, form and solve one step equations)

Y7: Spring block 4 (substitution of directed numbers, form and solve two step equations)
 Y7: Summer block 1 (properties of triangles and quadrilaterals)
 Y7: Summer block 3 (explore related algebraic expressions)
 Y8: Spring block 1 (expand single brackets, simplify expressions using brackets, solve inequalities, use formulae, expressions, identities and equations)
 Y8: Spring block 3 (working with indices)
Higher content
 Y7: Spring block 5 (simple algebraic fractions)
 Y8: Spring block 1 (expand a pair of binomials, form and solve equations and inequalities with unknowns on both sides)
 Y8: Spring block 2 (find the nth term rule of a linear sequence)
 Y8: Spring block 3 (exploring powers of powers)

Key words: <i>Factor, multiple, prime, common, odd, even, express, conjecture, counterexample, demonstrate, prove, verify, disprove, expand, factorise, binomial, quadratic, term, expression, simplify</i>	Explicit CEIAG links: <ul style="list-style-type: none"> • Make and test conjectures about patterns and relationships. • Reason deductively in geometry, number and algebra. • Simplify and manipulate algebraic expressions. 	CEIAG careers: <ul style="list-style-type: none"> • Risk Analyst- analyse and evaluate different areas with risks that can threaten the success of an enterprise. They also come up with solutions that can stop these potential threats by adopting analytical methods.
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Block 3 Testing conjectures	Check in. 1	TBAT identify factors, multiples and prime numbers	PowerPoint Presentation (whiteroseeducation.com)	Odd, even, square, cube numbers	216,225
	6	TBAT expand a pair of binomials		Expanding brackets	14
	9 (H)	TBAT expand three binomials		Quadratics	15
		TBAT complete check out			
		TBAT respond to feedback			

Rationale:
 This block revises area and perimeter of various 2D shapes with a focus on extending knowledge to three dimensions (3D). Higher students will build upon the previously taught topics for the list below and secure new knowledge in calculating the surface area and volume of prisms. Students need to be confident in substituting values into formulae and recalling nets, names and properties of 3D shapes.

Learning progression – topics students have seen that will play a vital role in understanding this block.
 Y7: Spring block 1 (perimeter)
 Y7: Spring block 2 (area of triangles, rectangles, parallelograms)
 Y7: Summer block 1 (properties of triangles and quadrilaterals)
 Y8: Autumn block 1 (circumference of circle)
 Y8: Summer block 2 (area of trapezium, circle and compound shapes)

<p><i>Higher content</i> Y7: Spring block 2 (area of trapezium) Y8: Summer block1/2/3 (explore diagonals of quadrilaterals)</p>						
<p>Key words: <i>Dimensions, cone, sphere, cube, cuboid, cylinder, tetrahedron, pyramid, face, edge, vertex, polygon, prism, cross-section, net, area, plan, elevation, perspective, isometric, perpendicular height, units, formulae, compound, surface, circumference, curved surface area, pi, length, width, base</i></p>			<p>Explicit CEIAG links:</p> <ul style="list-style-type: none"> • Use language and properties to analyse numbers, expression and 2-D and 3-D shapes. • Use properties of face, surfaces, edges and vertices to solve problems in 3-D • Solve problems involving perimeter, area and volume. 		<p>CEIAG careers:</p> <ul style="list-style-type: none"> • Video Games- Game art, development, programming and you can combine with 3D modelling. • Jewellers- When diamonds are cut into shapes, there are specific geometric patterns that need to be followed. 	
<p>Block 4 Three dimensional shapes</p>	<p>Check in. 1 & 2</p>	<p>TBAT recognise 2D and 3D shapes</p>	<p>PowerPoint Presentation (whiteroseeducation.com)</p>			<p>1,3</p>
	<p>3 & 4</p>	<p>TBAT sketch accurate nets of cuboids and other 3D shapes</p>		<p>Area & perimeter</p>	<p>4</p>	
	<p>5</p>	<p>TBAT draw plans and elevations</p>			<p>354</p>	
	<p>6</p>	<p>TBAT find the area of 2D shapes</p>		<p>Circles Compound shapes</p>	<p>41,42,44,45,48,49</p>	
	<p>7</p>	<p>TBAT calculate the surface area of cubes and cuboids</p>		<p>Net of 3D shapes</p>	<p>310</p>	
	<p>8</p>	<p>TBAT calculate the surface area of triangular prisms</p>		<p>Triangles Perpendicular lines</p>	<p>311,312</p>	
	<p>9</p>	<p>TBAT calculate the surface area of cylinders</p>		<p>Circles</p>	<p>315</p>	
	<p>10</p>	<p>TBAT calculate the volume of cubes and cuboids</p>		<p>Substitution into formulae Inverse operations</p>	<p>355</p>	
	<p>11</p>	<p>TBAT calculate the volume of prisms and cylinders</p>		<p>Inverse operations Perpendicular lines</p>	<p>356,357</p>	
	<p>12 (H)</p>	<p>TBAT calculate the volume of cones, pyramids and spheres</p>			<p>359,360,362</p>	
		<p>TBAT complete check out</p>				
		<p>TBAT respond to feedback</p>				
<p>Rationale:</p>						

This block revises knowledge from Y7 & 8, with a focus on consolidating numerical capabilities from KS2 and extending students understanding of the number system and place value to include decimals, fractions, powers and roots. Higher students will build upon the previously taught topics for the list below and secure new knowledge in surds and irrational numbers. Students need to select and use appropriate calculation strategies to solve increasingly complex problems, including in financial maths.

Learning progression – topics students have seen that will play a vital role in understanding this block.

Y7: Autumn block 4 (place value, ordering numbers, powers of 10, significant figures)

Y7: Spring block 2 (factors and multiples, four operations with decimals, order of operations)

Y7: Spring block 3 (fractions of an amount)

Y7: Spring block 4 (order direct numbers, four operations with directed numbers)

Y7: Spring block 5 (add and subtract mixed number fractions)

Y7: Summer block 5 (HCF & LCM, prime factorisation)

Y8: Autumn block 3 (multiply and divide fractions)

Y8: Spring block 5 (write numbers of any size in standard form)

Y8: Spring block 6 (round to dps and sf, estimation, convert between units of time)

Higher content

Y7: Autumn block 4 (1sf numbers in standard form)

Y7: Spring blocks 1/2 (multiply by 0.1 and 0.01)

Y7: Spring block 3 (solve problems with fractions greater than 1)

Y8: Spring block 5 (negative and fractional indices)

Y8: Spring block 6 (convert metric units of length and area)

Key words:

Integer, real, rational, irrational, root, surd, simplify, positive, negative, directed, inverse, square, cube, operation, quotient, product, sum, difference, decimal, remainder, adjust, compensate, factor, multiple, prime, product of primes, HCF, LCM, numerator, denominator, mixed number, improper fraction, standard form, exponent, power, index, million, billion, place value

Explicit CEIAG links:

- Use the four operations with integers, decimals, proper and improper fractions and mixed numbers both positive and negative.
- Use prime numbers, multiples, factors, and prime factorisation.
- Interpret and compare numbers in standard form.

CEIAG careers:

- Management accounting- put together and present financial reports that give senior managers insights into an organisation's performance.
- Computer programmer- coding, binary 0 and 1's

Block 6 Numbers	Check in. 2 (H)	TBAT use surds	PowerPoint Presentation (whiteroseeducation.com)	Simplifying/collecting like terms	305,306,307,308
	3	TBAT use directed numbers			205,206,207,208,209
	4 & 5	TBAT solve problems with integers and decimals		Money Percentages Place value	

	6	TBAT calculate the HCF and LCM			218,219
	7 & 8	TBAT add, subtract, multiply and divide fractions		Improper fractions Difference	21,22,23,24
	9	TBAT solve fraction problems			
	10	TBAT convert numbers in standard form		Indices Speed, distance, time Place value	300
		TBAT complete check out			
		TBAT respond to feedback			

Rationale:
 This block revises knowledge from Y7 & 8, with a focus on percentages. Higher students will build upon the previously taught topics for the list below and secure new knowledge in repeated percentage change. Students need to develop their use of formal mathematical knowledge, through solving problems and evaluating the outcomes, including in multistep problems and financial maths.

Learning progression – topics students have seen that will play a vital role in understanding this block.
 Y7: Autumn block 5 (interchange between FDP up to 100%)
 Y7: Spring block 3 (fractions of an amount, percentage of an amount up to 100%)
 Y8: Autumn block 1 (ration notation, divide into a ratio, pi as a ratio, work out parts and wholes)
 Y8: Spring block 4 (percentage increase and decrease, multipliers, percentages greater than 100%)

Higher content
 Y7: Autumn block 5 (explore FDP over 100%)
 Y7: Spring block 3 (explore finding percentages of amounts over 100%)
 Y8: Autumn block 1 (use 1:n, link gradient to ratio)
 Y8: Spring block 4 (find the original after percentage change)

<p>Key words: <i>Fraction, decimal, percentage, convert, equivalent, increase, decrease, reduce, multiplier, profit, loss, original, change, reverse, inverse, depreciate</i></p>	<p>Explicit CEIAG links:</p> <ul style="list-style-type: none"> Define percentages as ‘number parts per hundred’. Fractions and percentages as operators. 	<p>CEIAG careers:</p> <ul style="list-style-type: none"> Pharmacist/nurses- to prescribe the correct dosage of medicine to patients
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Block 7 Using percentages	Check in.	TBAT use FDP equivalence	PowerPoint Presentation (whiteroseeducation.com)		121-129, 130	
	1				Money	238
	2	TBAT calculate percentage increase and decrease			Conversion of FDP	233,237
	3	TBAT express a change as a percentage				

	4	TBAT solve reverse percentage problems			240
	5 & 6	TBAT solve percentage problems			
	7 (H)	TBAT solve problems with repeated percentage change		Indices Depreciation	
	7 H)	TBAT solve problems with repeated percentage change		Volume	
		TBAT complete check out			
		TBAT respond to feedback			
Assessment cycle	Autumn assessment				
	Personalised feedback	TBAT respond to autumn assessment feedback			Blocks 1-6 tested (Block 5 omitted)
Reflection/consolidation	(2 lessons)	TBAT (These will vary class by class) Do not use "understand" as this is not measurable			
<p>Rationale:</p> <p>This block revises knowledge from Y7 & 8, with a focus on functional, real-life maths. Higher students will build upon the previously taught topics for the list below and secure new knowledge in compound interest, calculating wages and understanding taxes. Students need to apply knowledge of percentages from the previous block of work to appreciate how tax and interest rates are calculated. Students will have to be efficient in the methods they select and should be confident in performing calculations using the calculator.</p> <p><i>Learning progression – topics students have seen that will play a vital role in understanding this block.</i></p> <p>Y7: Autumn block 5 (interchange between FDP up to 100%)</p> <p>Y7: Spring block 2 (factors and multiples, four operations with decimals, order of operations)</p> <p>Y7: Spring block 3 (fractions of an amount, percentage of an amount up to 100%)</p> <p>Y7: Spring block 4 (order direct numbers, four operations with directed numbers)</p> <p>Y7: Spring block 5 (add and subtract mixed number fractions)</p> <p>Y8: Autumn block 3 (multiply and divide fractions)</p> <p>Y8: Spring block 4 (percentage increase and decrease, multipliers, percentages greater than 100%)</p> <p>Y8: Spring block 6 (round to dps and sf, estimation, convert between units of time)</p> <p><i>Higher content</i></p> <p>Y7: Spring blocks 1/2(multiply by 0.1 and 0.01)</p> <p>Y8: Spring block 6 (convert metric units of length and area)</p>					
Key words:			Explicit CEIAG links:		CEIAG careers:

<p><i>Total, debit, credit, balance, expense, bill, percentage, interest, annual, deposit, principal, rate, compound, per annum, multiplier, tax, VAT, original, income, salary, wage, exemption, overtime, currency, convert, exchange, value, cost, proportion, unit, unitary</i></p>	<ul style="list-style-type: none"> • Solve problems with percentage change, increase and decrease, simple interest. • Use appropriate strategies to solve complex problems. • Interpret the structure of numerical problems. • Use of mathematical knowledge to solve problems including financial mathematics. 	<ul style="list-style-type: none"> • HMRC- Calculate and collect taxes of UK tax payers to pay for the UK public services and help families and individuals targeted with financial support.
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<p>Block 8 Maths & money</p>	<p>Check in. 1</p>	<p>TBAT solve problems with bills and bank statements</p>	<p>PowerPoint Presentation (whiteroseeducation.com)</p>		<p>400e</p>
	<p>2</p>	<p>TBAT calculate simple interest</p>		<p>Decimals</p>	
	<p>3</p>	<p>TBAT calculate compound interest</p>		<p>Percentage increase/decrease</p>	<p>236</p>
	<p>4</p>	<p>TBAT solve problems with VAT</p>			<p>400g</p>
	<p>5</p>	<p>TBAT calculate wages and taxes</p>			<p>400h</p>
	<p>6</p>	<p>TBAT solve problems with exchange rates</p>		<p>Decimals</p>	<p>214a</p>
	<p>7</p>	<p>TBAT solve unit price problems</p>		<p>Proportion</p>	
	<p></p>	<p>TBAT complete check out</p>			
	<p></p>	<p>TBAT respond to feedback</p>			

Rationale:
 This block revises knowledge from Y7 & 8, with a focus on solving angle problems. Higher students will build upon the previously taught topics for the list below and secure new knowledge in constructions and geometrical reasoning. Students should begin to reason deductively in geometry, number and algebra, including using geometrical constructions.

Learning progression – topics students have seen that will play a vital role in understanding this block.
 Y7: Summer block 2 (angles at a point, angles on straight line, vertically opposite, angles in triangle and quadrilaterals)
 Y8: Summer block 1 (angles in parallel lines, interior & exterior angles of polygons, find & prove simple geometric facts)

Higher content
 Y7: Summer block 2 (angles in parallel lines, simple angle proofs)
 Y8: Summer block 1 (angles formed by diagonals of quadrilaterals)

<p>Key words:</p>	<p>Explicit CEIAG links:</p> <ul style="list-style-type: none"> • Use compass constructions. 	<p>CEIAG careers:</p>
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<i>Alternate, corresponding, co-interior, transversal, parallel, perpendicular, isosceles, interior, exterior, regular, equation, polygon, sum, total, conjecture, prove, justify, counterexample, parallelogram, rhombus, kite, diagonal, bisect, locus, equidistant, construct</i>	<ul style="list-style-type: none"> Describe, sketch and draw using conventional terms and notations. Apply angle properties. Use angles in parallel lines facts. 	<ul style="list-style-type: none"> Environmental engineers- use the study of lines to design plant control and repair the environmental health hazards.
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Block 9 Deduction	Check in.	TBAT solve problems with angles in parallel lines	PowerPoint Presentation (whiteroseeducation.com)	Basic angle lines	25,35,37,39
	1	TBAT solve problems with angles in parallel lines			25,35,37,39
	2	TBAT solve angle problems using a chain of reasoning			
	2	TBAT solve angle problems using a chain of reasoning			
	3	TBAT solve angle problems using algebra		Solving equations using algebra	
	3	TBAT solve angle problems using algebra		Interior/exterior angles	
		TBAT complete check out			
		TBAT respond to feedback			

Rationale:
 This block revises and extends knowledge from Y7 & 8, with a focus on transforming geometric figures through rotation and translation. Higher students will build upon the previously taught topics for the list below and secure new knowledge in performing a series of transformations. Students should begin to reason deductively using geometrical constructions.

Learning progression – topics students have seen that will play a vital role in understanding this block.
 Y7: Summer block 1 (draw lines, angles and simple shapes, name and construct polygons)
 Y8: Autumn block 2 (scale factors)
 Y8: Summer block 3 (recognise lines of symmetry, reflect shapes in a given line)

Higher content
 Y8: Summer block 3 (standard ruler and compass constructions)

NB – Rotations and translations have not been covered explicitly before. Teachers should be mindful that these will be new concepts to students.

Key words: <i>Shape, rotational, symmetry, order, regular, irregular, line, mirror, direction, invariant, clockwise, anti-clockwise, centre, object, image, translate, vector, horizontal, vertical, vertex, reflect</i>	Explicit CEIAG links: <ul style="list-style-type: none"> Identify and describe translations, rotation and reflections. 	CEIAG careers: <ul style="list-style-type: none"> Aerospace Engineers- Perform a variety of engineering work in designing,
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			<ul style="list-style-type: none"> Describe, sketch and draw using conventional terms and notations. Develop problem solving and evaluating outcomes including multi-step problems. 	constructing, and testing aircraft, missiles, and spacecraft.	
Block 10 Rotation & translation	Check in. 1 & 2	TBAT compare rotational symmetry with line symmetry	PowerPoint Presentation (whiteroseeducation.com)		
	3	TBAT rotate a shape about a point on a shape		Area	275
	4	TBAT rotate a shape about a point not on a shape			275
	5	TBAT translate shapes by a given vector			325,326
	6	TBAT compare rotations and reflections of shapes			
	7 (H)	TBAT find the results of a series of transformations			
	7 (H)	TBAT find the results of a series of transformations			
		TBAT complete check out			
		TBAT respond to feedback			
<p>Rationale: This block is based on using Pythagoras' Theorem and trigonometric ratios to solve problems involving right angled triangles. Student have not met anything related to this topic before so it is important to build solid understanding as students will meet this topic in Y10 (Autumn block 2 & Summer block 1) and in Y11 (Autumn block 6, Spring block 2 & Spring block 4)</p>					
<p>Key words: <i>Square, root, integer, significant figures, decimal place, hypotenuse, opposite, adjacent, right-angle, sum, origin, quadrant, negative, positive, gradient, 2D, 3D</i></p>			<p>Explicit CEIAG links:</p> <ul style="list-style-type: none"> Use Pythagoras to solve problems. Apply angles facts, congruence, similarity and properties of quadrilaterals to find missing sides and angles. Interpret mathematical relationships both algebraically and geometrically. Reason deductively in geometry, number and algebra. 		<p>CEIAG careers:</p> <ul style="list-style-type: none"> Astronomers- use the Pythagorean Theorem to calculate the paths of spacecraft, including rockets and satellites.

Block 11 Pythagoras & trigonometry	Check in. 2 & 4	TBAT identify and calculate the hypotenuse	PowerPoint Presentation (whiteroseeducation.com)	Significant figures	
	3	TBAT determine whether a triangle is right-angled		Area of triangles	261
	5	TBAT calculate the missing sides in right-angled triangles			257
	6	TBAT use Pythagoras' theorem on coordinate axes		Coordinates Gradient Line graphs	258
	8 (H)	TBAT use Pythagoras' theorem in 3D shapes			259
	8 (H)	TBAT use Pythagoras' theorem in 3D shapes			259
	1	TBAT identify H,O and A			
	2	TBAT find the hypotenuse using sine, cosine and tangent			
	2	TBAT find a shorter side using sine, cosine and tangent			329
	3	TBAT find a missing angle using sine, cosine and tangent			329
	3	TBAT find a missing angle using sine, cosine and tangent			329
		TBAT complete check out			
		TBAT respond to feedback			
Assessment cycle	Spring assessment				
Personalised feedback	TBAT respond to autumn assessment feedback			Blocks 7- 10 tested	
Reflection/ consolidation	(3 lessons)	TBAT (These will vary class by class) Do not use "understand" as this is not measurable			
Rationale:					
This block is based on transformations, specifically enlargements. Student have met rotation and translation transformations in block 10 so links should be made here. Students will also appreciate the term scale factor through work with scale drawings and mappings in block 5.					
Key words:		Explicit CEIAG links:		CEIAG careers:	

<p><i>Similar, ratio, enlargement, scale factor, corresponding, object, image, integer, positive, negative, centre, distance, position, fraction, inverted, rotation, orientation, ratio, right-angle</i></p>	<ul style="list-style-type: none"> • Construct similar shapes by enlargement. • Use scale factors, scale diagrams and maps. • Apply angle facts, congruence, similarity properties. • Understand multiplicative relationships between two quantities can be expressed as ratio or fractions.. 	<ul style="list-style-type: none"> • Architect- use shapes and angles when making plans for residential, commercial and public spaces.
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Block 12 Enlargement & similarity	Check in.	TBAT enlarge a shape by a positive integer scale factor	PowerPoint Presentation (whiteroseeducation.com)	Ratio	104
	2	TBAT enlarge a shape by a positive integer scale factor from a point		Coordinates	104a
	3	TBAT enlarge a shape by a positive fractional scale factor		Fractions of amounts	107
	4	TBAT enlarge a shape by a positive fractional scale factor		Negative numbers	108
	5 (H)	TBAT enlarge a shape by a negative scale factor		Ratio	292
	6	TBAT find the missing sides and angles in similar shapes			292
	7 (H)	TBAT solve problems with similar triangles			
	8 (H)	TBAT explore ratios in right-angled triangles			
	TBAT complete check out				
	TBAT respond to feedback				

Rationale:
 This block revises knowledge from Y7 & 8, with a focus on ratio and proportion. Higher students will build upon the previously taught topics for the list below and secure new knowledge in inverse proportion and being able to represent these relationships graphically. Students should be able to interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning.

Learning progression – topics students have seen that will play a vital role in understanding this block
 Y7: Spring block 2 (convert metric units)
 Y7: Summer block 3 (use multiplicative relationships between known facts)
 Y8: Autumn block 1 (ratio notation, divide into a ratio, work out parts and wholes)

Y8: Autumn block 2 (currency conversions, conversion graphs)
 Higher content
 Y8: Autumn block 1 (form 1:n, linking gradient to ratio)
 Y8: Autumn block 2 (direct proportion graphs)

Key words: <i>Relationship, ratio, multiplier, constant, scale factor, graph, linear, non-linear, gradient, variable, inverse, product, proportional, factor, equivalent, share, equal parts, unit coat, multiple, direct, inverse, equation, fraction, divide</i>	Explicit CEIAG links: <ul style="list-style-type: none"> • Divide a given quantity into two parts, a given part, a whole part. • Understand multiplicative relationships between two quantities can be expressed as ratio or fractions. • Solve problems with direct and inverse proportion. • Use compound units. 	CEIAG careers: <ul style="list-style-type: none"> • Chefs- to find the correct amount of ingredients needed to complete a recipe for a large group of people.
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Block 13 Ratio	Check in.	TBAT solve problems with direct proportion	PowerPoint Presentation (whiteroseeducation.com)	Money Ratio	254
	1	TBAT manipulate direct proportion and conversion graphs		Unitary method	254
	2	TBAT solve problems with inverse proportion			255
	3	TBAT explore graphs of inverse relationships			255
	4 (H)	TBAT solve ratio problems		FDP	
	5	TBAT solve best buy problems		Exchange rates	210
	6	TBAT solve problems involving ratio and algebra		Expanding brackets Simplifying/collecting like terms	
	7 (H)	TBAT complete check out			
		TBAT respond to feedback			

Rationale:
 This block revises knowledge from Y7 & 8, with a focus on compound measures ie speed, density and pressure. Higher students will build upon the previously taught topics for the list below and secure new knowledge in how to convert compound units ie m/s to kmph. Students need to apply knowledge of compound measures to solve problems in numerical and algebraic contexts.

Students have not met compound measures before but need to know how to substitute into a formula and how to rearrange formulae in order to understand this block. This topic is revisiting and extended in Y11 (Spring block 1).

Key words: <i>Speed, distance, time, per, hours, minutes, convert, round, accuracy, average, gradient, axes, origin, density, mass, volume, substitute, rearrange, constant rate, flow rate, prism, volume, rate of change, units, imperial, metric</i>	Explicit CEIAG links: <ul style="list-style-type: none"> • Use compound units. • Understand multiplicative relationships between two quantities can be expressed as ratio or fractions. • Change freely between related standard units. 	CEIAG careers: <ul style="list-style-type: none"> • Bankruptcy specialist- Investigate the finances of a bankrupt person, collect payments from them to pay their creditors and sell all their assets.
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Block 14 Rates	Check in. 1 & 2	TBAT solve speed, distance, time problems	PowerPoint Presentation (whiteroseeducation.com)	Rounding	299
	3	TBAT use distance-time graphs		Inverse operations	
	4	TBAT solve density problems		Gradient	171
	5	TBAT solve flow problems		Area of triangles	
	6	TBAT draw rate of change graphs		Converting units	384
	7	TBAT convert compound units		Rearrange formulae	
	7	TBAT convert compound units		Volume of prisms	
		TBAT complete check out	Straight line graphs		
		TBAT respond to feedback	Conversions	390a,390b	
				350,351	
				350,351	

Rationale:
 This block revises knowledge from Y7 & 8, with a focus on probability. Higher students will build upon the previously taught topics for the list below and secure new knowledge in constructing tree diagrams for scenarios where items are and aren't replaced. Students should be able to generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes. They should also enumerate sets and unions/intersections of sets systematically using tables, grids and Venn diagrams.

Learning progression – topics students have seen that will play a vital role in understanding this block
 Y7: Spring block 1 (line and pie charts)
 Y7: Summer block 4 (probability language, calculating probabilities, sample spaces, Venn diagram notation, sum of probabilities is 1)
 Y8: Autumn block 5 (construct and interpret frequency tables and two-way tables)
 Y8: Summer block 4 (collecting data, misleading graphs, multiple bar charts, line graphs)

<p><i>Higher content</i> Y7: Summer block 4 (complement of a set)</p>				
<p>Key words: <i>Event, outcome, equally likely, even chance, biased, unbiased, fair, experiment, trail, frequency, relative, expected, mutually exclusive, independent, product, conditional, replacement, Venn diagram, intersection, union, sample space, two-way table</i></p>		<p>Explicit CEIAG links:</p> <ul style="list-style-type: none"> Record, describe and analyse the frequency of outcome. Understand the probability of all outcomes sum to 1. Enumerate sets, unions, intersections of sets, using tables, grids and Venn diagrams. Generate theoretical sample spaces for single and combined events. 		
<p>CEIAG careers:</p> <ul style="list-style-type: none"> Air traffic controller- Predicting safety of air transport is based on 3 factors; safety and redundancy systems, the training and monitoring of accredited pilots and the multitasking skills of the air traffic controllers. 				
<p>Block 15 Probability</p>	<p>Check in.</p>	<p>TBAT calculate the probability of a single event</p>	<p>PowerPoint Presentation (whiteroseeducation.com)</p>	
	<p>1</p>	<p>TBAT calculate relative frequencies</p>	<p>FDP equivalence</p>	
	<p>2</p>	<p>TBAT predict expected outcomes</p>	<p>Coordinates Plotting graphs</p>	<p>248</p>
	<p>3</p>	<p>TBAT calculate independent events</p>	<p>Estimation</p>	<p></p>
	<p>4</p>	<p>TBAT use diagrams to calculate probabilities</p>	<p>Two-way tables</p>	<p>249</p>
	<p>7</p>	<p>TBAT use tree diagrams</p>	<p>Product rule</p>	<p>252</p>
	<p>5 (H)</p>	<p>TBAT use tree diagrams</p>	<p></p>	<p>252</p>
	<p>5 (H)</p>	<p>TBAT use tree diagrams in conditional probability</p>	<p></p>	<p></p>
	<p>6 (H)</p>	<p>TBAT use tree diagrams in conditional probability</p>	<p></p>	<p></p>
	<p>6 (H)</p>	<p>TBAT complete check out</p>	<p></p>	<p></p>
<p></p>	<p>TBAT respond to feedback</p>	<p></p>	<p></p>	
<p>Rationale: This block revises knowledge from Y7 & 8, with a focus on drawing and interpreting quadratic and reciprocal graphs. Higher students will build upon the previously taught topics for the list below and secure new knowledge in simultaneous equations. Students need to develop their algebraic and graphical fluency, including understanding linear and quadratic functions. Students should be confident in: plotting coordinates in all four quadrants, substituting values into expressions, solving equations and rearranging and simplifying expressions.</p>				
<p><i>Learning progression – topics students have seen that will play a vital role in understanding this block</i></p>				

Y7: Autumn block 2 (function machines, algebraic notation, substituting into expressions, represent functions graphically)
 Y7: Autumn block 3 (collecting like terms, form & solve one step equations)
 Y7: Spring block 4 (form & solve two step equations, substituting directed numbers)
 Y8: Autumn block 4 (using coordinates, plotting graphs)
 Y8: Spring block 1 (expanding single brackets, simplifying expressions with brackets, solve inequalities)
 Y8: Spring block 3 (indices)
Higher content
 Y7: Spring block 5 (simple algebraic fractions)
 Y8: Autumn block 4 (exploring gradient, exploring non-linear graphs)
 Y8: Spring block 1 (expand a pair of binomials, form & solve equations and inequalities with unknowns on both sides)
 Y8: Spring block 3 (powers of powers)

Key words: <i>Quadratic, parabola, curve, vertex, turning point, symmetry, reciprocal, exponential, discontinuous, piece-wise, simultaneous, solution, intersection, satisfy, inequality, test point</i>	Explicit CEIAG links: <ul style="list-style-type: none"> Recognise, sketch and produce graphs of quadratic functions. Use quadratic graphs to estimate values for x and y. Use linear graphs to estimate values for x and y. Use concepts of expressions, equations, inequalities, terms and factors. 	CEIAG careers: <ul style="list-style-type: none"> Military and law enforcement- Quadratic equations are often used to describe the motion of objects that fly.
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Block 16 Algebraic representations	Check in.	TBAT draw quadratic graphs	PowerPoint Presentation (whiteroseeducation.com)	Table of values	264,265
	1	TBAT interpret quadratic graphs		Coordinates	
	1	TBAT interpret quadratic graphs		Symmetry	
	3 (H)	TBAT solve simultaneous equations graphically		Square numbers	
	3 (H)	TBAT solve simultaneous equations graphically		Solving equations	297
	4	TBAT represent inequalities graphically		Y intercepts	297
		TBAT complete check out		Greater than, less than	180,181
	TBAT respond to feedback				

Assessment cycle	Summer assessment
	Summer assessment

	Personalised feedback	TBAT response to summer assessment feedback			Blocks 11-15 tested
	Personalised feedback	TBAT response to summer assessment feedback			
Reflection/ consolidation	(Rest of term 2/3 weeks)	TBAT (These will vary class by class) Do not use "understand" as this is not measurable	Use QLA from summer assessment to identify gaps and reteach areas of weakness		