The bigger picture topic	Step	Learning intention	Support	Interleaving topics	Corberttmaths clip numbers
Rationale: This unit focuses initially on the meaning of ratio and various models that can be used to represent ratios. Students will have been exposed to ratio and proportion previously as it is now part of the KS2 national curriculum. However, ratio and proportion were not revisited in year 7, hence the importance of using concrete and pictorial representations to ensure a conceptual understanding.					
Key words: *Ratio, proportion, equal parts, order, colon, divide, multiply, placeholder, units, multiplier, total, share, factors, simplify, equivalent, common factors, compare, denominator, numerator, fraction*			Explicit CEAIG links: • Solve problems involving Direct and inverse proportion • Use scale factors, scale diagrams and maps • Divide a given quantity into a given part. • Use the four operations	CEAIG careers: • Chemical engineer/Chef - Need to share ingredients in specified quantities	
Block 1 **Ratio & scale**	**Check in.** 1 & 2	TBAT represent ratios and use ratio notation	PowerPoint Presentation (whiteroseeducation.com)		269
	6	TBAT express ratios in the simplest integer form		Factors	269
	5	TBAT divide into a given ratio			270
	3	TBAT use the form 1:n and n:1			271c
	10 (H)	TBAT express ratios in the form 1:n			271c
	4	TBAT use the form m:n			269a
	8	TBAT compare ratios and fractions			269a
		TBAT complete check out and respond to feedback			
Rationale: This unit follows on from the multiplicative relationships block in year 7 and extends to working with the link between ratio and scaling, including the idea of direct proportion, hence why this block is sequenced afterwards the ratio and scale block. Contexts such as conversions of currencies is evident throughout this block, to provide rich opportunities for problem solving. Students will be familiar with conversions from spring block 2 in year 7. Links are also made with maps and scales, which is revisited in year 9, autumn block 5.					
Key words: *Linear, double, triple, variable, proportion, ratio, axes, units, conversion, approximation, exchange rate, currency, estimate, sterling, rate, constant, directly proportional, origin, orientation, corresponding, similar, scale factor, enlargement, image, length, plan, not to scale, distance, metric*			Explicit CEAIG links: • Solve problems involving Direct and inverse proportion • Use scale factors, scale diagrams and maps • Divide a given quantity into a given part.	CEAIG careers: • Pilot – Using maps consistently for air traffic	

			• Use the four operations		
Block 2 Multiplicative change	**Check in.** 1	TBAT solve direct proportion problems	PowerPoint Presentation (whiteroseeducation.com)		254
	2 & 4 (H)	TBAT explore conversion and direct proportion graphs		Estimation	255b
	3	TBAT convert between currencies		Drawing and completing tables	214a
	5	TBAT find missing sides of similar shapes			292
	6	TBAT find scale factors of similar shapes		Ratios 1:n	292
	7	TBAT draw and interpret scale diagrams		Converting units	283/284
	8	TBAT interpret maps			284
		TBAT complete check out and respond to feedback			
Rationale: Students will have had little experience of multiplying and dividing fractions in year 6 and year 7; here we seek to deepen understanding by looking at multiple representations to see what underpins the often-confusing algorithms. There is an emphasis on the understanding of the reciprocal and its uses and links between fractions and decimals are also revisited.					
Key words: *Unit fraction, numerator, denominator, product, repeated addition, integer, square, commutative, quotient, divide, estimate, reciprocal, convert, simplify, factors, mixed number, improper, indices*			Explicit CEAIG links: • Solve problems involving Direct and inverse proportion • Use scale factors, scale diagrams and maps • Divide a given quantity into a given part. • Use the four operations	CEAIG careers: • Caterer/event planner – Scaling up quantities and time management using direct and inverse proportion	
Block 3 Multiply & divide fractions	**Check in.** 2	TBAT multiply a fraction by an integer	PowerPoint Presentation (whiteroseeducation.com)	Improper to mixed number fractions	142
	3	TBAT find the product of unit fractions		Converting decimals and percentages	142
	4	TBAT find the product of any fraction		Shading fractions	142
	7	TBAT find the reciprocal		Division of an integer by a fraction	145
	8 (5 & 6)	TBAT divide any pair of fractions			134

	9	TBAT multiply & divide mixed number and improper fractions			139/140
	10	TBAT multiply and divide algebraic fractions			22/23
		TBAT complete check out and respond to feedback			
Rationale: Building on their knowledge of coordinates from KS2, students will look formally at algebraic rules for straight lines, starting with lines parallel to the axes and moving on to the more general form. The focus in this block is using equations to produce lines rather than the interpretation of m and c from a given equation as this will be covered in year 9. Use of technology to illustrate graphs will be embedded. Additional higher content is embedded in this block which involves exploring non-linear graphs and mid-points of line segments.					
Key words: *Quadrant, coordinates, horizontal, vertical, axes, origin, parallel, straight line, equation, graph, scale, diagonal, gradient, substitute, linear, direct proportion, unitary, convert, difference, input, output, y-intercept, negative, positive, ratio, ascend, descend, midpoint, equidistant, segment, mean*			Explicit CEAIG links: • Develop algebraic and graphical fluency • Substitute numerical values into formulae and expressions	CEAIG careers: • Investment analyst – Forecasting investments via use of tables charts and diagrams.	
Block 4 **Cartesian plane**	**Check in.** 1	TBAT plot coordinates in all four quadrants	PowerPoint Presentation (whiteroseeducation.com)		84
	2	TBAT draw lines parallel to the axes		Parallel lines	192/193
	3 & 4	TBAT recognise and use the line y=x and y=kx		Plotting coordinates Substitution	
	5 & 6 (H)	TBAT link y=kx to direct proportion problems and explore gradients		Multiplication	189
	7	TBAT recognise and use the line y=x+a		Substitution Parallel lines	191
	8	TBAT explore graphs with negative gradients		Negative numbers	189
	10	TBAT plot graphs in the form y=mx+c		Substitution Four operations	191
	12 (H)	TBAT find the midpoint of a line segment			198
	12 (H)	TBAT find the midpoint of a line segment			198
		TBAT complete check out and respond to feedback			
Rationale: This block aims to extend students' knowledge of graphs and charts from KS2 to deal with both discrete and continuous data. Students are introduced formally to bivariate data and the idea of linear correlation.					

Key words: *Variable, relationship, origin, scale, coordinate, axis, increase, decrease, correlation, positive, negative, strong, weak, line of best fit, estimate, extrapolate, outlier, non-linear, discrete, continuous, qualitative, quantitative, frequency, subtotal, ungrouped, grouped, tally, range, class boundary, inequality*			Explicit CEAIG links: • Substitute numerical values into formulae and expressions • Construct and interpret appropriate tables, charts, and diagrams	CEAIG careers: • Data analyst – Analysing data for use in business or research.	
Block 5 Representing data	**Check in.** 1 & 2	TBAT draw and describe scatter graph correlation	PowerPoint Presentation (whiteroseeducation.com)		168
	3	TBAT draw and use the line of best fit			167
	5	TBAT identify different types of data		Bar charts Scatter graphs	342/343
	8 & 9	TBAT represent grouped discrete and continuous data			343
	10	TBAT construct and interpret two-way tables			319
		TBAT complete check out and respond to feedback			
Rationale: Building on from the year 7 unit, the aim of this short block is to remind students of the ideas of probability, looking at sample spaces and the use of tables to represent these. With the year 7 unit being block 4 in the summer term, some sets will not have covered all aspects of probability. This block is reviewed in year 9 and extends the year 7 and year 8 coverage.					
Key words: *Outcomes, sample space, set, probability, systematic, chance, event, bias, unbiased, two-way tables, denominator, numerator, random, intersection, union, region, possibilities, product, Venn diagram, product rule*			Explicit CEAIG links: • Construct and interpret appropriate tables, charts, and diagrams. • Use language and properties to analyse probability and statistics	CEAIG careers: • Actuary- Working with probabilities to make decisions for companies managing risk.	
Block 6 Tables & probability	**Check in.** 1	TBAT construct sample space diagrams	PowerPoint Presentation (whiteroseeducation.com)	Two-way tables	246
	2	TBAT find probabilities from a sample space		Fractions and percentages of amounts	246
	3	TBAT find probabilities from two-way tables		Fractions	319
	4	TBAT identify non-linear relationships			

	5	TBAT use the product rule			383
		TBAT complete check out and respond to feedback			
Rationale: This unit aims to build on students' understanding of equivalence and forming and solving equations from year 7, exploring expanding over a single bracket and factorising by taking out common factors. Bar models will be used throughout to help students make sense of the maths. Emphasis is also placed on both forming and solving equations rather than just looking at procedural methods of finding solutions. Additional higher content involves exploring expanding two binomials and solving more complex equations involving unknowns on both sides					
Key words: *Expression, simplify, term, substitute, coefficient, equivalent, positive, negative, directed, solve, expand, bracket, identity, factor, factorise, common, like/unlike terms, binomial, quadratic, unknown, solution, equation, inequality, satisfy, balance, formula, subject*			Explicit CEAIG links: • Identify variables and express relationships between variables algebraically • Substitute numerical values into formulae and expressions, including scientific formulae.	CEAIG careers: • Astronomer – Understanding and using formulae to calculate extra-terrestrial bodies movements.	
Block 7 Brackets, equations & inequalities	**Check in.** 3 & 5	TBAT expand and simplify single bracket	PowerPoint Presentation (whiteroseeducation.com)	Perimeter and area	13
	4	TBAT factorise a single bracket		Highest common factor	117
	6	TBAT expand a pair of binomials		Collecting like terms	14
	7 & 8	TBAT solve and form equations with brackets		Solving one step equations	16
	9 & 10	TBAT form and solve simple inequalities			115
	11 (H)	TBAT solve equations & inequalities with unknowns on both sides		Angles Missing probabilities	110/178/179
	12 (H)	TBAT form and solve equations with unknowns on both sides			110
		TBAT complete check out and respond to feedback			
Assessment cycle	Autumn assessment				
	Autumn assessment				
	Personalised feedback	TBAT respond to autumn assessment feedback			Blocks 1-5 tested

Reflection/ consolidation week	(3 lessons)	TBAT (These will vary class by class) Do not use "understand" as this is not measurable			
Rationale: This short block reinforces students' learning from the start of year 7, extending this to look at sequences with more complex algebraic rules, now that students are more familiar with a wider range of notation covered in block 7. Additional higher content involves finding a rule for the nth term for a linear sequence, using objects and images to understand the meaning of the rule.					
Key words: *Sequence, position, term, linear, non-linear, Fibonacci, difference, constant, algebraic, integer, substitute, bracket, expand, rule, coefficient, term-to-term*			Explicit CEAIG links: • Recognise arithmetic and geometric sequences and find the nth term. • Understand and use standard mathematical formulae.	CEAIG careers: • Cryptographer – Use of sequencing and algorithms to narrow down code.	
Block 8 Sequences	**Check in.** 1	TBAT generate sequences	PowerPoint Presentation (whiteroseeducation.com)		286
	2	TBAT generate sequences given an algebraic rule		Solving equations Substitution	288
	3	TBAT generate sequences given an algebraic rule (more complex)			288
	4 (H)	TBAT find the nth term of a linear sequence			288
		TBAT complete check out and respond to feedback			
Rationale: The aim of this block is to lay the groundwork by making sure students are comfortable with expressions involving powers, simplifying e.g. $3x^2y$ X $5xy^3$. Once students are confident with expressions involving powers, this will allow them to explore the ideas behind the addition and subtraction laws of indices, which is also revisited when standard form is studied next term. To challenge students further, the higher strand looks at finding powers of powers.					
Key words: *Expression, simplify, term, coefficient, index, powers. Multiply, product, expand, numerator, denominator, common factor, base, root, exponent*			Explicit CEAIG links: • Substitute numerical values into formulae and expressions, including scientific formulae.	CEAIG careers: • Computational biologist – use of formulae throughout career.	
Block 9 Indices	**Check in.** 1	TBAT add & subtract expressions	PowerPoint Presentation (whiteroseeducation.com)	Collecting like terms	9
	4	TBAT use the laws for indices			17/174
	2 & 3	TBAT multiply & divide algebraic expressions		Division Multiples	18/11
	5	TBAT use addition laws of indices			17/174

	6 (H)	TBAT explore powers of powers			17/174
		TBAT complete check out and respond to feedback			
Rationale: This block focuses on the relationships between fractions and percentages, including decimal equivalents, and using these to work out percentage increase and decrease. Calculator and non-calculator methods are developed throughout to support students to choose efficient methods and to increase student's resilience. To challenge students further, the higher strand looks at finding the original value given a percentage of after a percentage change.					
Key words: *Fraction, decimal, percentage, equivalent, denominator, numerator, rounding, estimate, hundredth, tenth, reduce, decrease, multiplier, increase, growth, express, factor, multiple, integer, profit, loss, interest, change, original, invest, reverse*			Explicit CEAIG links: • Define percentage and interpret percentage changes as fractions or decimals.	CEAIG careers: • Financial planner – solving critical life issues to help people control their flow of capital.	
Block 10 **Fractions & percentages**	**Check in.** 1	TBAT convert between fractions, decimals and percentages	PowerPoint Presentation (whiteroseeducation.com)	Number lines Equivalence	130
	4	TBAT convert between fractions, decimals and percentages greater than 100%		Division Multiplication % of amounts	130
	3	TBAT find fractions, decimals and percentages of amounts			137/234/235/94
	5	TBAT find a percentage decrease multiplier			238
	6	TBAT find a percentage increase multiplier		FDP conversions Multiplication	238
	9	TBAT calculate percentage change			233
	11 (H)	TBAT find reverse percentages (decrease)			240
	12 (H)	TBAT find reverse percentages (increase)			240
		TBAT complete check out and respond to feedback			
Rationale: The aim of this block is to revisit standard form, which students following the higher strand in year 7 have briefly looked at. This block does build on from their earlier work on indices last term. The use of context is important throughout this block, to help students make sense of the need for the notation and its uses. With students on the higher strand already been exposed to standard form previously, additional higher content has been added which includes a basic introduction to negative and fractional indices.					
Key words: *Base, index, power, exponent, place value, negative, positive, commutative, scientific notation, zero, reciprocal, root*			Explicit CEAIG links: • Use integer powers and use standard form with positive powers of n.	CEAIG careers: • Nuclear engineer – using exponential components of half-life to work with nuclear material.	

Block 11 **Standard form**	**Check in.** 2	TBAT work with large numbers in standard form	PowerPoint Presentation (whiteroseeducation.com)	Index laws Powers of 10	300
	4	TBAT work with small numbers in standard form			300
	5	TBAT compare and order numbers in standard form			300
	7	TBAT add and subtract numbers in standard form		Indices Four operations	301
	8	TBAT multiply and divide numbers in standard form			302/303
	10 (H)	TBAT use negative indices			175
	11 (H)	TBAT use fractional indices			173
		TBAT complete check out and respond to feedback			
Rationale: This block provides a timely opportunity to revisit a lot of basic skills in a wide variety of contexts. Estimation is a key focus and the use of mental strategies will therefore be embedded throughout. Solving problems involving the time and the calendar will also be explicitly looked at, as this area is sometimes neglected leaving gaps in students' knowledge. Additional higher content includes looking at the conversion of area and volume units, as well as having an extra step on the use of error notation to best prepare them for KS4					
Key words: *Round, significant, power, nearest, integer, number line, decimal point, decimal place, estimate, root, over/underestimate, error interval, discrete, continuous, bound, change, deposit, interest, debit, credit, balance, metric, metre, kilo, milli, centi, area, perimeter, perpendicular, dimensions, units, volume, capacity, weight*			Explicit CEAIG links: • Develop their use of formal mathematics knowledge to interpret and solve problems including financial maths • Use standard units of mass length time etc. • Use approximation through rounding.	CEAIG careers: • Nurse - Measuring accurate amounts of liquids and quantities using standard units.	
Block 12 **Number sense**	**Check in.** 1 & 2	TBAT round numbers to 1 significant figure and to decimal places	PowerPoint Presentation (whiteroseeducation.com)		279a
	3	TBAT estimate calculations		Powers Roots	215
	4	TBAT use error intervals			377
	6	TBAT calculate with money		Fractions Percentages	400

				Ratio	
	7 & 8	TBAT convert metric lengths, weights and capacities		Perimeter Area Ordering integers	349a/b/c
	9 (H)	TBAT convert metric units of area			350
	10 (H)	TBAT convert metric units of volume			351
	11	TBAT solve problems with time		Mixed numbers Fractions	322
		TBAT complete check out and respond to feedback			
Assessment cycle	Spring assessment				
	Spring assessment				
	Personalised feedback	TBAT response to spring assessment feedback			Blocks 6- 10 tested
Reflection/ Consolidation week	(4 lessons)	TBAT (These will vary class by class) Do not use "understand" as this is not measurable	Use QLA from spring assessment to identify gaps and reteach areas of weakness		
Rationale: This block builds on KS2 and year 7 understanding of angle notation and relationships, extending all students to explore angles in parallel lines and thus solve increasingly complex missing angle problems. Links are then made to the closely connected properties of polygons and quadrilaterals. Higher steps are present in this block to develop students' understanding of the idea of proof. They will also start to explore constructions with rulers and pairs of compasses.					
Key words: *Adjacent, straight, vertically opposite, acute, obtuse, reflex, right angle, parallel, transversal, alternate, corresponding, co-interior, isosceles, equilateral, scalene, parallelogram, rectangle, square, kite, rhombus, trapezium, bisect, polygon, exterior, interior, perpendicular*			Explicit CEAIG links: • Apply properties of angles around points, straight lines, and transversals in parallel lines. • Use angle properties in triangles and other polygons.	CEAIG careers: • Joiner – thorough use of angles and angle facts to identify correct installations.	
Block 13 Angles in parallel lines	**Check in.** 1	TBAT use basic angle rules and notation	PowerPoint Presentation (whiteroseeducation.com)		35/30
	3	TBAT calculate alternate angles		Forming and solving equations	25
	3	TBAT calculate corresponding angles			25

	4	TBAT calculate co-interior angles		Forming and solving equations	25
	4	TBAT identify all types of angles			
	5	TBAT solve complex problems with parallel line angles		Algebraic expressions	25
	10	TBAT find the sum of exterior angles in any polygon			32
	11 & 12	TBAT find the sum of interior angles in any polygon and regular polygons			32
	14 (H)	TBAT construct an angle bisector			72
	15 (H)	TBAT construct a perpendicular bisector of a line			78
		TBAT complete check out and respond to feedback			
Rationale: Students will not have met the formulae for the area of a trapezium and the area of a circle previously. A key aspect of the unit is choosing and using the correct formula for the correct shape, reinforcing recognising the shapes, their properties and names and looking explicitly at compound shapes.					
Key words: *Formula, area, triangle, square, parallelogram, rhombus, parallel, perpendicular height, compound, sector, estimate, infinity, radius, pi, diameter, circumference, perimeter, significant figures*			Explicit CEAIG links: • Derive and apply formulae for area and perimeter of trapezia, triangles, and parallelograms.	CEAIG careers: • Architect – Working with specific dimensions and angles to construct	
Block 14 **Trapezia & circles**	**Check in.** 1	TBAT calculate the area of rectangles, parallelograms and triangles	PowerPoint Presentation (whiteroseeducation.com)	Unit conversions	44
	2	TBAT calculate the area of a trapezium			48
	3	TBAT calculate the perimeter and area of compound shapes		Multiplication Addition	41
	5	TBAT calculate the area of a circle (in terms of pi)		Order of operations	59
	6	TBAT calculate the area of a circle (with calculator)		Substitution Rounding	59
	7	TBAT calculate the perimeter and area of compound shapes (2)		Area of a circle Substitution	41
		TBAT complete check out and respond to feedback			
Rationale: The aim behind this block is to ensure students attain a deeper understanding of reflection. The teaching of reflection here is split from that of rotation and translation to try and ensure the conceptual understanding and to avoid mixing up the different concepts. Although there is comparatively little content in this block, each					

step has been allocated an hour to be taught rather than combining the steps. This is because we wanted to invest time to build confidence with shapes and lines in different orientations, as this can sometimes be overlooked and is what students find difficult at KS4.					
Key words: *Reflect, symmetry, regular, polygon, vertical, horizontal, image, object, congruent, perpendicular distance, vertex, origin, axis, mirror line*			Explicit CEAIG links: • Identify the properties of and describe the results of reflections applied to given figures.	CEAIG careers: • Artist – Using geometrical properties and reflections to construct geometric art pieces.	
Block 15 **Line of symmetry**	**Check in.** 2 & 3	TBAT reflect a shape	PowerPoint Presentation (whiteroseeducation.com)	Properties of 2D shapes	272
	4	TBAT reflect a shape diagonally (touching mirror line)		Parallel lines Perpendicular lines	272
	5	TBAT reflect a shape diagonally (not touching mirror line)		Plotting coordinates	272
		TBAT complete check out and respond to feedback			
Rationale: Much of the statistics content in KS3 is a continuation of that studied at KS2, and many of the charts and graphs in this block have been used in year 7 and earlier in year 8. A particular focus here is using charts to compare different distributions and exploring when graphs may be misleading, an important real-life consideration. There is time allocated in year 9 to revise over this block.					
Key words: *Hypothesis, investigation, enquiry, primary/secondary data, sample, questionnaire, biased, unbiased, pictogram, bar chart, line chart, frequency, tally, scale, axes, key, pie chart, rotation, proportion, scatter graph, bivariate, intervals, continuous, discrete, range, spread, average, consistent, distribution, mislead*			Explicit CEAIG links: • Describe, interpret, and compare observed distributions of a single variable through appropriate methods. • Construct and interpret a wide variety of tables charts and diagrams.	CEAIG careers: • Social scientist – Following and analysing trends in human behaviours and then displaying them using tables and charts.	
Block 16 **Data handling cycle**	**Check in.** 3	TBAT interpret pictograms, bar charts & vertical line charts	PowerPoint Presentation (whiteroseeducation.com)		161/162
	4	TBAT draw and interpret multiple bar charts			147/148
	5	TBAT draw and interpret pie charts		FDP conversions	163/164
	6	TBAT draw and interpret line graphs			160

	8	TBAT represent grouped quantitative data			342
	9	TBAT find and interpret the range			57
	10	TBAT compare distributions using charts			
		TBAT complete check out and respond to feedback			
Rationale: Students will have already met the median and mean earlier in KS3. The aim of this block is to revise the year 7 coverage and extend to introduce the mode and looks at when and why each average should be used. The previous block is built on, as students can compare distributions, using these averages and the range. Higher steps include finding the mean from an ungrouped and grouped frequency table.					
Key words: *Average, mean, median, mode, modal value, total, represent, frequency, estimate, midpoint, outlier, range, consistent, spread*			Explicit CEAIG links: • Describe, interpret, and compare observed distributions of a single variable through appropriate measures of central tendency.	CEAIG careers: • Meteorologist – Use variables and distributions to calculate weather patterns within a climate.	
Block 17 Location of measure	**Check in.** 1	TBAT calculate the mean, median and mode	PowerPoint Presentation (whiteroseeducation.com)		53/50/56
	3 (H)	TBAT find the mean from an ungrouped frequency table		Inequalities	54
	4 (H)	TBAT find the mean from a grouped frequency table			54
	5	TBAT identify outliers		Scatter graphs	
	6	TBAT compare distributions using averages and the range			57a
		TBAT complete check out and respond to feedback			
Assessment cycle	Summer assessment				
	Summer assessment				
	Summer assessment				
	Personalised feedback	TBAT response to summer assessment feedback			Blocks 11-14 tested
	Personalised feedback	TBAT response to summer assessment feedback			
		TBAT (These will vary class by class)			

Reflection/ consolidation week	(Rest of term 2/3 weeks)	Do not use “understand” as this is not measurable	Use QLA from summer assessment to identify gaps and reteach areas of weakness		