Year 7	Ter	m 1	Ter	m 2	To	erm 3
	HT1	HT2	НТ3	HT4	HT5	HT6
	•Add and subtract numbers with up to three digits, using formal written methods of columnar addition and subtraction •Solve problems, including missing number problems, using number facts, place value and more complex addition and	•Understand and use place value for decimals, measures and integers of any size •Order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols =, ≠, , ≤, ≥ •Work interchangeably with terminating decimals and their	•Use a calculator and other technologies to calculate results accurately and then interpret them appropriately •Generate terms of a sequence from either a term-to-term or a		• Define percentage as 'number of parts per hundred', interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages, and work with	
	determine the	fractions •Round numbers and measures to an appropriate	relationships between operations including inverse operations Use and interpret algebraic notation, including: ab in place of a × b, 3y in place of y + y + y and 3 × y,	including inverse operations Output Output	another, where the fraction is less than 1 and greater than 1 Construct and interpret	 Enumerate sets and unions/intersections of sets systematically, using tables, grids and venn diagrams Generate theoretical sample spaces for single and combined events with equally likely,

- the concept of zero and place value
- •Solve problems involving the relative sizes of two quantities where missing values can be found by using integer multiplication and division facts
- Read, write, and convert time between analogue and digital 12- and 24-hour clocks
- •Solve problems involving converting from hours to minutes; minutes to seconds; years to months; weeks to days
- •Solve problems involving increasingly harder fractions to calculate quantities, and fractions to divide quantities, including non-unit
- Describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data and appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers)
- •Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using

- a² in place of a × a, a³ in place of a × a × a, a²b in place of a × a × b, a/b in place of a ÷ b, coefficients written as fractions rather than as decimals, brackets

 Substitute numerical values into formulae and expressions,
- and expressions, including scientific formulae

 Model situations or procedures by
- procedures by translating them into algebraic expressions or formulae and by using graphs
- •Use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation a<x≤b
 •Simplify and
- •Simplify and manipulate algebraic expressions to maintain equivalence by:

- exact representations of roots and their decimal approximations
- Use a calculator and other technologies to calculate results accurately and then interpret them appropriately
- Substitute numerical values into formulae and expressions, including scientific formulae
- Understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors
- Simplify and manipulate algebraic expressions to maintain equivalence by:
 Collecting like terms
 Multiplying a single term over a bracket
 Taking out common

factors

- charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data
- operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative
- Interpret fractions and percentages as operators
- •Order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; ose the symbols =, ≠, , ≤, ≥
- Work interchangeably with terminating decimals and their

- mutually exclusive
 outcomes and use these
 to calculate theoretical

 Draw and measure line
 segments and angles in
 geometric figures,
 including interpreting
 - Draw and measure line segments and angles in geometric figures, including interpreting scale drawings
 Describe, sketch and draw using conventional
 - Describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally symmetric
 Use the standard
 - the sides and angles of triangle abc, and know and use the criteria for congruence of triangles

 Identify and construct congruent triangles, and construct similar shapes

by enlargement, with

and without coordinate

conventions for labelling

grids
•Construct and interpret appropriate tables, charts, and diagrams,

- fractions where the answer is a whole number
- Identify, name and write equivalent fractions of a given fraction, represented visually, including tenths and hundredths
- Compare and order fractions whose denominators are all multiples of the same number
- •Solve problems involving multiplying and adding, including using the distributive law to multiply two digit numbers by one digit, integer scaling problems and harder correspondence problems such as n objects are connected to m objects.

- product notation and the unique factorisation property
- •Use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximations
- operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative
- Recognise and use relationships between operations including inverse operations

- -Collecting like terms
 -Multiplying a single
 term over a bracket
 -Taking out common
 factors
- -Expanding products of two or more binomials
- Use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement)
- Use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships
- Move freely between different numerical, algebraic, graphical and diagrammatic representations [for example, equivalent fractions, fractions and decimals, and equations and

graphs]

- -Expanding products of two or more binomials
- Understand and use standard mathematical formulae; rearrange formulae to change the subject
- Define percentage as 'number of parts per hundred', interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using
- Express one quantity as a fraction of another, where the fraction is less than 1 and greater than 1

percentages, and

percentages greater

work with

than 100%

• Construct and interpret

- corresponding fractions

 Consolidate their
- numerical and mathematical capability from key stage 2 and extend their understanding of the number system and place value to include
- powers and roots

 Move freely
 between different
 numerical, algebraic,
 graphical and
 diagrammatic
 representations [for
 example, equivalent
 fractions, fractions
 and decimals, and
 equations and
 graphs]

 Select and use

decimals, fractions,

appropriate
calculation strategies
to solve increasingly
complex problems
Develop their
mathematical
knowledge, in part
through solving

- including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data
- Derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies
- Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles
- Understand and use the relationship between parallel lines and alternate and corresponding angles
 Derive and use the sum of angles in a triangle
- of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons

- Solve comparison, sum and difference problems using information presented in a line graph
- •Solve problems involving the calculation and conversion of units of measure, using decimal notation up to three decimal places where appropriate
- oldentify, describe and represent the position of a shape following a reflection or translation, using the appropriate language, and know that the shape has not changed
- Recognise and show, using diagrams, families of common equivalent fractions
 Solve problems involving number

- Derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids (including cubes) and other prisms (including cylinders)
- Construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data Use conventional

notation for the

priority of

operations,

Make and test conjectures about patterns and relationships; look for proofs or counterexamples
 Develop their mathematical knowledge, in part through solving problems and

evaluating the

outcomes, including

- multi-step problems
 Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics
- Begin to model situations mathematically and express the results using a range of formal mathematical representations
 Select appropriate
- Select appropriate concepts, methods and techniques to apply to unfamiliar

- appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data
- Consolidate their numerical and mathematical capability from key stage 2 and extend their understanding of the number system and place value to include decimals, fractions, powers and roots
- between different numerical, algebraic, graphical and diagrammatic representations [for example, equivalent fractions, fractions and decimals, and equations and graphs]

- problems and evaluating the outcomes, including multi-step problems
- Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics
- Begin to model situations mathematically and express the results using a range of formal mathematical representations
- Select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems.

- Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs
- Use language and properties precisely to analyse numbers, algebraic expressions, 2-d and 3-d shapes, probability and statistics
- Begin to reason
 deductively in geometry,
 number and algebra,
 including using
 geometrical
 constructions
 Develop their
- mathematical
 knowledge, in part
 through solving
 problems and evaluating
 the outcomes, including
 multi-step problems
- Develop their use of formal mathematical knowledge to interpret and solve problems,

up to three decimal	including brackets,	and nonroutine	Develop their use of	including in financial
places	powers, roots and	problems.	formal mathematical	mathematics
•Interpret negative	reciprocals		knowledge to	●Begin to model
numbers in	Substitute		interpret and solve	situations
context, count	numerical values		problems, including	mathematically and
forwards and	into formulae and		in financial	express the results using
backwards with	expressions,		mathematics	a range of formal
positive and	including scientific		Begin to model	mathematical
negative whole	formulae		situations	representations
numbers, including	Change freely		mathematically and	Select appropriate
through zero	between related		express the results	concepts, methods and
Solve problems	standard units [for		using a range of	techniques to apply to
involving	example time,		formal mathematical	unfamiliar and
increasingly harder	length, area,		representations	nonroutine problems.
fractions to	volume/capacity,		Select appropriate	
calculate	mass]		concepts, methods	
quantities, and	Consolidate their		and techniques to	
fractions to divide	numerical and		apply to unfamiliar	
quantities,	mathematical		and nonroutine	
including non-unit	capability from key		problems.	
fractions where the	stage 2 and extend			
answer is a whole	their			
number	understanding of			
Solve problems	the number			
involving	system and place			
multiplication and	value to include			
division, including	decimals, fractions,			
scaling by simple	powers and roots			
fractions and	Select and use			
problems involving	appropriate			
measure	calculation			
●Use all four	strategies to solve			
operations to solve				

problems involving	ncreasingly		
	ncreasingly		
	complex problems		
, ,	Develop their		
1 '	mathematical		
1 · · · · · · · · · · · · · · · · · · ·	nowledge, in part		
1 1	hrough solving		
1 1 1	problems and		
	evaluating the		
1 - 1	outcomes,		
1 · · · · · · · · · · · · · · · · · · ·	ncluding		
1 '	nulti-step		
1 , ,	problems		
1 · · · · · · · · · · · · · · · · · · ·	Develop their use		
1 ' ' ' 1	of formal		
1	nathematical		
1 - 1	nowledge to		
	nterpret and solve		
quadrilaterals, and	problems,		
	ncluding in		
Calculate the mean	inancial		
as an average	nathematics		
Calculate, estimate	Begin to model		
and compare	ituations		
volume of cubes	nathematically		
and cuboids using	and express the		
standard units,	esults using a		
including cubic	ange of formal		
centimetres (cm³)	nathematical		
and cubic metres	epresentations		
(m³), and extending	Select appropriate		
to other units [for	concepts, methods		
example, mm ³ and	and techniques to		
km³].	ipply to unfamiliar		

Enumerate	and nonroutine		
possibilities of	problems.		
combinations of			
two variables			
Find pairs of			
numbers that			
satisfy an equation			
with two unknowns			
Use their			
knowledge of the			
order of operations			
to carry out			
calculations			
involving the four			
operations			
Solve problems			
involving addition,			
subtraction,			
multiplication and			
division			
Solve problems			
involving the			
calculation and			
conversion of units			
of measure, using			
decimal notation			
up to three decimal			
places where			
appropriate			
Solve problems			
involving			
multiplication and			
division, including			

Topic	scaling by simple fractions and problems involving simple rates Transition Unit – Based on KS2 NC	1. Place Value 2. Types of Number 3. Addition & Subtraction 4. Multiplication & Division	5. Sequences 6. Algebraic Notation 7. Equality & Equivalence	8. Operations with Equations and Directed Number 9. Fractions, Decimals, Percentages	9. Fractions, Decimals, Percentages 10. Fractions and Percentages of Amounts 11. Adding and Subtracting Fractions	12. Sets and Probability 13. Constructing and Measuring 14. Develop Geometric Reasoning
Assessment	Formal Formative	Summative	Formal Formative	Formal Formative	Summative	Informal Formative
	Assessment	Assessment	Assessment	Assessment	Assessment	Assessment
	(based on KS2 NC)	-DC1 Assessment	-Assessment in	-Assessment in	-DC2 End of Year	-Use of whiteboards
	-Baseline	in Week 13	Week 20	Week 25	Assessment in Week	during lessons
	Assessment in	Informal	Informal Formative	Informal Formative	32	-Targeted questioning
	Week 1	Formative	Assessment	Assessment	Informal Formative	(no hands up)
	Formal Formative	Assessment	-Use of whiteboards	-Use of whiteboards	Assessment	-Live marking and
	Assessment	-Use of	during lessons	during lessons	-Use of whiteboards	feedback
	-Exit Assessment in	whiteboards	-Targeted	-Targeted	during lessons	-Homework Tasks
	Week 6	during lessons	questioning (no	questioning (no	-Targeted	-Exit Tickets
	Informal Formative	-Targeted	hands up)	hands up)	questioning (no	
	Assessment	questioning (no	-Live marking and	-Live marking and	hands up)	
		hands up)	feedback	feedback	-Live marking and	
			-Homework Tasks	-Homework Tasks	feedback	

-Use of	-Live marking and	-Exit Tickets	-Exit Tickets	-Homework Tasks	
whiteboards during	feedback			-Exit Tickets	
lessons	-Homework Tasks				
-Targeted	-Exit Tickets				
questioning (no					
hands up)					
-Live marking and					
feedback					
-Exit Tickets					

Year 8	Ter	m 1	Ter	m 2	Te	erm 3
	HT1	HT2	HT3	HT4	HT5	HT6
Key	Use scale factors,	Substitute	Use and interpret	 Substitute numerical 	Use integer powers	Derive and use the
knowledge	scale diagrams and	numerical values	algebraic notation,	values into formulae	and associated real	standard ruler and
(NC	maps	into formulae and	including: ab in place	and expressions,	roots (square, cube	compass constructions
driven)	Use ratio notation,	expressions,	of a × b, 3y in place	including scientific	and higher),	(perpendicular bisector
,	including reduction	including scientific	of $y + y + y$ and $3 \times y$,	formulae	recognise powers of	of a line segment,
	to simplest form	formulae	a^2 in place of a \times a, a^3	Understand and use	2, 3, 4, 5 and	constructing a
	Divide a given	Work with	in place of $a \times a \times a$,	the concepts and	distinguish between	perpendicular to a given
	quantity into two	coordinates in all	a^2b in place of $a \times a \times$	vocabulary of	exact	line from/at a given
	parts in a given	four quadrants	b, a/b in place of a ÷	expressions,	representations of	point, bisecting a given
	part:part or	Recognise, sketch	b, coefficients	equations,	roots and their	angle); recognise and
	part:whole ratio;	and produce	written as fractions	inequalities, terms	decimal	use the perpendicular
	express the division	graphs of linear	rather than as	and factors	approximations	distance from a point to
	of a quantity into	and quadratic	decimals, brackets	Simplify and	Interpret and	a line as the shortest
	two parts as a ratio	functions of one	● Work	manipulate algebraic	compare numbers in	distance to the line
	Understand that a	variable with	interchangeably with	expressions to	standard form a x	Use the standard
	multiplicative	appropriate	terminating decimals	maintain	10n 1≤a<10, where	conventions for labelling
	relationship	scaling, using	and their	equivalence by:	n is a positive or	the sides and angles of
	between two	equations in x and	corresponding	-Collecting like terms	negative integer or	triangle abc, and know
	quantities can be	y and the Cartesian	fractions	-Multiplying a single	zero	and use the criteria for
	expressed as a ratio	plane	Define percentage as	term over a bracket	Derive and apply	congruence of triangles
	or a fraction	Interpret	'number of parts per	-Taking out common	formulae to calculate	Derive and illustrate
	Relate the language	mathematical	hundred', interpret	factors	and solve problems	properties of triangles,
	of ratios and the	relationships both	percentages and	-Expanding products	involving: perimeter	quadrilaterals, circles,
	associated	algebraically and	percentage changes	of two or more	and area of triangles,	and other plane figures
	calculations to the	graphically	as a fraction or a	binomials	parallelograms,	[for example, equal
	arithmetic of	Construct and	decimal, interpret	Understand and use	trapezia, volume of	lengths and angles] using
	fractions and to	interpret	these	standard	cuboids (including	appropriate language
	linear functions	appropriate tables,	multiplicatively,	mathematical	cubes)	and technologies
	Solve problems	charts, and	express one quantity	formulae; rearrange	Calculate and solve	Apply the properties of
	involving direct and	diagrams,	as a percentage of		problems involving:	angles at a point, angles

- inverse proportion, including graphical and algebraic representations
- Use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals
- Use standard units of mass, length, time, money and other measures, including with decimal quantities
- Round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures
- Use approximation through rounding to estimate answers and calculate possible resulting errors expressed using

- including frequency tables, bar charts, pie charts, and pictograms for categorical data, bar) charts for ungrouped and grouped numerical data
- Describe simple mathematical relationships between two variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs Describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular

lines, right angles,

regular polygons,

that are

and other polygons

- another, compare two quantities using percentages, and work with percentages greater than 100% and vertical line (or Interpret fractions and percentages as operators
 - •Use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative
 - •Record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale

- formulae to change the subject Use algebraic
- methods to solve linear equations in one variable (including all forms that require rearrangement)
- Generate terms of a sequence from either a term-to-term or a position-to-term rule
- Recognise arithmetic sequences and find the nth term
- Recognise geometric sequences and appreciate other sequences that arise • Identify variables
- and express relations between variables algebraically and graphically
- Develop their mathematical knowledge, in part through solving problems and evaluating the

- perimeters of 2-d shapes (including circles), areas of circles and composite shapes Derive and use the standard ruler and
- compass constructions (perpendicular bisector of a line segment, constructing a perpendicular to a given line from/at a
- bisecting a given angle); recognise and use the perpendicular distance from a point to a line as the

shortest distance to

given point,

- the line Use the standard conventions for labelling the sides
- and angles of triangle abc, and know and use the criteria for congruence of

triangles

- at a point on a straight line, vertically opposite angles
- Understand and use the relationship between parallel lines and alternate and corresponding angles
- Derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons
- Describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data and appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers)
- Construct and interpret appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie

- inequality notation a<x≤b
- Move freely between different numerical, algebraic, graphical and diagrammatic representations [for example, equivalent fractions, fractions and decimals, and equations and graphs]
- Extend their understanding of the number system; make connections between number relationships, and their algebraic and graphical representations
- Extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional

- reflectively and rotationally symmetric
- of, and describe the results of, translations, rotations and reflections applied to given figures
- •Move freely between different numerical, algebraic, graphical and diagrammatic representations [for example, equivalent fractions, fractions and decimals, and equations and graphs]
- Develop algebraic and graphical fluency, including understanding linear and simple quadratic functions
 Use language and properties

precisely to

analyse numbers,

- Understand that the probabilities of all possible outcomes sum to 1
 Enumerate sets and
- Enumerate sets and unions/intersections of sets systematically, using tables, grids and Venn diagrams
- •Generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical •Consolidate their numerical and
- mathematical capability from key stage 2 and extend their understanding of the number system and place value to include decimals, fractions, powers and roots
- •Select and use appropriate calculation strategies

- outcomes, including multi-step problems

 Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial
- Begin to model situations mathematically and express the results using a range of formal mathematical representations

mathematics

 Select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems

- Derive and illustrate properties of triangles, quadrilaterals, circles, and other plane figures [for example, equal lengths and angles] using appropriate language and technologies
- Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles
- Understand and use the relationship between parallel lines and alternate and corresponding angles
- Derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons
- Develop their mathematical

- charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data
- Explore what can and cannot be inferred in statistical and probabilistic settings, and begin to express their arguments formally
- Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems
- Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics
 Begin to model
- situations
 mathematically and
 express the results using
 a range of formal
 mathematical
 representations

unlations.	al a alamata	to only discussionals	The second section is a second	a Calaat a waxaa wiata
relations	algebraic	to solve increasingly	knowledge, in part	•Select appropriate
algebraically	expressions, 2-d	complex problems	through solving	concepts, methods and
•Interpret when the	' '	Substitute values in	problems and	techniques to apply to
structure of a	probability and	expressions,	evaluating the	unfamiliar and
numerical problem	statistics	rearrange and	outcomes, including	nonroutine problems
1 ' ' '	Extend their	simplify expressions,	multi-step problems	
multiplicative or	understanding of	and solve equations	Develop their use of	
proportional		●Use language and	formal mathematical	
reasoning	system; make	properties precisely	knowledge to	
Develop their	connections	to analyse numbers,	interpret and solve	
mathematical	between number	algebraic	problems, including	
knowledge, in part	relationships, and	expressions, 2-d and	in financial	
through solving	their algebraic and	3-d shapes,	mathematics	
problems and	graphical	probability and	Begin to model	
evaluating the	representations	statistics	situations	
outcomes,	Develop their	Develop their	mathematically and	
including	mathematical	mathematical	express the results	
multi-step	knowledge, in part	knowledge, in part	using a range of	
problems	through solving	through solving	formal mathematical	
Develop their use	problems and	problems and	representations	
of formal	evaluating the	evaluating the	Select appropriate	
mathematical	outcomes,	outcomes, including	concepts, methods	
knowledge to	including	multi-step problems	and techniques to	
interpret and solve	multi-step	Develop their use of	apply to unfamiliar	
problems, including	problems	formal mathematical	and nonroutine	
in financial	Develop their use	knowledge to	problems	
mathematics	of formal	interpret and solve		
■Begin to model	mathematical	problems, including		
situations	knowledge to	in financial		
mathematically and	interpret and solve	mathematics		
express the results	problems,	Begin to model		
using a range of	including in	situations		
formal		mathematically and		

	mathematical representations •Select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems	financial mathematics Begin to model situations mathematically and express the results using a range of formal mathematical representations Select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems	express the results using a range of formal mathematical representations • Select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems			
Topic	1. Ratio & Scale 2. Multiplicative Change 3. Number Sense	4. Working in the Cartesian Plane 5. Representing Data 6. Line Symmetry & Reflection	7. Indices 8. Fractions & Percentages 9. Multiplying & Dividing Fractions 10. Tables & Probability	11. Brackets, Equations & Inequalities 12. Sequences	13. Standard Index Form 14. Area of Trapezia & Circles 15. Angles in Parallel Lines & Polygons	15. Angles in Parallel Lines & Polygons 16. Measures of Location 17. The Data Handling Cycle
Assessment	Formal Formative Assessment -Assessment in Week 6	Summative Assessment -DC1 Assessment in Week 13	Formal Formative Assessment -Assessment in Week 20	Formal Formative Assessment -Assessment in Week 25	Summative Assessment	Informal Formative Assessment -Use of whiteboards during lessons

As -U wl les -Ti qu ha -Li fe	Targeted uestioning (no ands up) Live marking and eedback	Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks -Exit Tickets	Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks -Exit Tickets	Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks -Exit Tickets	-DC2 End of Year Assessment in Week 34 Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks	-Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks -Exit Tickets
		-Exit lickets			-Homework Tasks -Exit Tickets	

Year 9	Ter	m 1	Ter	m 2	To	erm 3
	HT1	HT2	HT3	HT4	HT5	HT6
Key	Use the concepts	Recognise, sketch	Apply angle facts,	Draw and measure	Apply angle facts,	Describe, sketch and
knowledge	and vocabulary of	and produce	triangle congruence,	line segments and	triangle congruence,	draw using conventional
(NC	prime numbers,	graphs of linear	similarity and	angles in geometric	similarity and	terms and notations:
driven)	factors (or divisors),	and quadratic	properties of	figures, including	properties of	points, lines, parallel
,	multiples, common	functions of one	quadrilaterals to	interpreting scale	quadrilaterals to	lines, perpendicular
	factors, common	variable with	derive results about	drawings	derive results about	lines, right angles,
	multiples, highest	appropriate	angles and sides,	Derive and use the	angles and sides,	regular polygons, and
	common factor,	scaling, using	including	standard ruler and	including	other polygons that are
	lowest common	equations in x and	Pythagoras'	compass	Pythagoras'	reflectively and
	multiple, prime	y and the Cartesian	Theorem, and use	constructions	Theorem, and use	rotationally symmetric
	factorisation,	plane	known results to	(perpendicular	known results to	Apply the properties of
	including using	Interpret	obtain simple proofs	bisector of a line	obtain simple proofs	angles at a point, angles
	product notation	mathematical	Use Pythagoras'	segment,	Use Pythagoras'	at a point on a straight
	and the unique	relationships both	Theorem and	constructing a	Theorem and	line, vertically opposite
	factorisation	algebraically and	trigonometric ratios	perpendicular to a	trigonometric ratios	angles
	property	graphically	in similar triangles to	given line from/at a	in similar triangles to	Understand and use the
	Use the four	Reduce a given	solve problems	given point,	solve problems	relationship between
	operations,	linear equation in	involving	bisecting a given	involving	parallel lines and
	including formal	two variables to	right-angled	angle); recognise	right-angled	alternate and
	written methods,	the standard form	triangles	and use the	triangles	corresponding angles
	applied to integers,	y = mx + c;	●Interpret	perpendicular	●Interpret	Understand and use the
	decimals, proper	calculate and	mathematical	distance from a	mathematical	concepts and vocabulary
	and improper	interpret gradients	relationships both	point to a line as the	relationships both	of expressions,
	fractions, and	and intercepts of	algebraically and	shortest distance to	algebraically and	equations, inequalities,
	mixed numbers, all	graphs of such	geometrically	the line	geometrically	terms and factors
	both positive and	linear equations	Use scale factors,	Use the standard	Derive and apply	Recognise, sketch and
	negative	numerically,	scale diagrams and	conventions for	formulae to calculate	produce graphs of linear
	Interpret and	graphically and	maps	labelling the sides	and solve problems	and quadratic functions
	compare numbers	algebraically	Understand that a	and angles of	involving: perimeter	of one variable with
	in standard form a		multiplicative	triangle abc, and	and area of triangles,	appropriate scaling,

relationship

between two

or a fraction

Identify and

triangles, and

shapes by

and without

construct similar

enlargement, with

coordinate grids

of mass, length,

time, money and

other measures.

decimal quantities

Round numbers and

appropriate degree

number of decimal

measures to an

of accuracy [for

example, to a

including with

Use standard units

quantities can be

expressed as a ratio

construct congruent

- x 10n 1≤a<10, where n is a positive or negative integer or zero
- Appreciate the infinite nature of the sets of integers, real and rational numbers
- Define percentage as 'number of parts per hundred', interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages, and work with percentages greater than 100% Interpret fractions and percentages as

operators

- - part:part or express the division of a relationship between two expressed as a

and inverse

proportion,

- Use linear and quadratic graphs to estimate values of y for given values of x and vice versa and to find approximate solutions of simultaneous linear equations
- Use ratio notation, including reduction to simplest form Divide a given
- quantity into two parts in a given part:whole ratio; quantity into two parts as a ratio Understand that a multiplicative
- places or significant quantities can be figures Use a calculator and ratio or a fraction •Solve problems involving direct
 - other technologies to calculate results accurately and then interpret them appropriately

- know and use the criteria for congruence of triangles
- Record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1
- Understand that the probabilities of all possible outcomes sum to 1

probability scale

- Enumerate sets and unions/intersections of sets systematically, using tables, grids and Venn diagrams
- Generate theoretical sample spaces for single and combined events with equally likely, mutually

- parallelograms, trapezia, volume of cuboids (including cubes) and other prisms (including cylinders)
- Use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3D Describe, sketch and
- conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively and rotationally

draw using

Identify properties of, and describe the results of, translations, rotations and reflections applied to given figures

symmetric

- using equations in x and v and the Cartesian plane
- •Use linear and quadratic graphs to estimate values of y for given values of x and vice versa and to find approximate solutions of simultaneous linear equations
- Find approximate solutions to contextual problems from given graphs of a variety of functions, including piece-wise linear. exponential and reciprocal graphs Use the concepts and
- vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor. lowest common multiple, prime factorisation, including using product notation and the unique factorisation property

- •Solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics
- Understand and use standard mathematical formulae; rearrange formulae to change the subject
- Model situations or procedures by translating them into algebraic expressions or formulae and by using graphs
- Use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement)

- including graphical and algebraic representations •Use compound
- units such as speed, unit pricing and density to solve problems

 Change freely
- between related standard units [for example time, length, area, volume/capacity, mass]
- Develop algebraic and graphical fluency, including understanding linear and simple quadratic functions
- Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step

problems

- •Solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics
- Select and use
 appropriate
 calculation strategies
 to solve increasingly
 complex problems
 Interpret when the
- Interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning
- Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems
- outcomes, including multi-step problems
 Develop their use of formal mathematical knowledge to interpret and solve

- exclusive outcomes and use these to calculate theoretical probabilities
- Use language and properties precisely to analyse numbers, algebraic expressions, 2-d and 3-d shapes, probability and statistics
- Explore what can and cannot be inferred in statistical and probabilistic settings, and begin to express their arguments formally
- Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems
 Develop their use of formal mathematics
- Develop their use of formal mathematical knowledge to interpret and solve problems, including

 Use language and properties precisely to analyse numbers, algebraic expressions, 2-d and 3-d shapes, probability and

statistics

• Extend and formalise their knowledge of ratio and proportion in working with measures and geometry, and in formulating proportional relations algebraically

Develop their

- mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems
 Develop their use of
- formal mathematical knowledge to interpret and solve problems, including in financial mathematics

- •Simplify and manipulate algebraic expressions to maintain equivalence by:
- -Collecting like terms
- -Multiplying a single term over a bracket
- -Taking out common factors
- -Expanding products of two or more binomials
- Make and test conjectures about patterns and relationships; look for proofs or counterexamples
- Begin to reason deductively in geometry, number and algebra, including using geometrical constructions
- Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems
- Develop their use of formal mathematical knowledge to interpret and solve problems,

- Move freely between different numerical. algebraic, graphical and diagrammatic representations [for example, equivalent fractions, fractions and decimals, and equations and graphs]
- Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems
- Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics
- Begin to model situations mathematically and

- Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial mathematics
- Begin to model situations mathematically and express the results using a range of formal mathematical representations
- Select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems

- problems, including in financial mathematics
- Begin to model situations mathematically and express the results using a range of formal mathematical representations
- •Select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems

- in financial mathematics
- Begin to model situations mathematically and express the results using a range of formal mathematical representations
- Select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems
- Begin to model situations mathematically and express the results using a range of formal mathematical
- •Select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems

representations

- including in financial mathematics Begin to model
- situations mathematically and express the results using a range of formal mathematical representations
- Select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems

	express the results using a range of formal mathematical representations • Select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems					
Topic	1. Number	4. Straight Line	7. Pythagoras	10. Constructions	12. Trigonometry	15. Deduction
	2. Using	Graphs	8. Enlargement &	& Congruency	13. 3D Shapes	16. Algebraic
	Percentages	5. Ratio &	Similarity	11. Probability	14. Rotation &	Representation
	3. Form & Solve	Proportion	9. Maths & Money		Translation	17. Testing Conjecture
	Equations	6. Rates				
Assessment	Formal Formative Assessment -Assessment in Week 6 Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback	Summative Assessment -DC1 Assessment in Week 13 Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up)	Formal Formative Assessment -Assessment in Week 20 Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks	Formal Formative Assessment -Assessment in Week 25 Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks	Summative Assessment -DC2 End of Year Assessment in Week 34 Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback	Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks -Exit Tickets

-Homework Tasks -Exit Tickets	-Live marking and feedback -Homework Tasks -Exit Tickets	-Exit Tickets	-Exit Tickets	-Homework Tasks -Exit Tickets	

Year 10	Terı	m 1	Ter	m 2	Term 3	
Foundation	HT1	HT2	HT3	HT4	HT5	HT6
Key	Use integer powers	●Use the four	Use and interpret	Draw and measure	Derive and apply	 Construct and interpret
knowledge	and associated real	operations,	algebraic notation,	line segments and	formulae to calculate	appropriate tables,
(NC	roots (square, cube	including formal	including: ab in place	angles in geometric	and solve problems	charts, and diagrams,
driven)	and higher),	written methods,	of a × b, 3y in place	figures, including	involving: perimeter	including frequency
,	recognise powers	applied to integers,	of $y + y + y$ and $3 \times y$,	interpreting scale	and area of triangles,	tables, bar charts, pie
	of 2, 3, 4, 5 and	decimals, proper	a2 in place of a × a,	drawings	parallelograms,	charts, and pictograms
	distinguish	and improper	a3 in place of a × a ×	Use the standard	trapezia, volume of	for categorical data, and
	between exact	fractions, and	a, a2 b in place of a ×	conventions for	cuboids (including	vertical line (or bar)
	representations of	mixed numbers, all	a × b, a/b in place of	labelling the sides	cubes) and other	charts for ungrouped
	roots and their	both positive and	a ÷ b, coefficients	and angles of	prisms (including	and grouped numerical
	decimal	negative	written as fractions	triangle abc, and	cylinders)	data
	approximations	Define percentage	rather than as	know and use the	Calculate and solve	Describe simple
	Interpret and	as 'number of	decimals, brackets	criteria for	problems involving:	mathematical
	compare numbers	parts per hundred',	Substitute numerical	congruence of	perimeters of 2-d	relationships between
	in standard form a	interpret	values into formulae	triangles	shapes (including	two variables (bivariate
	x 10n 1≤a<10,	percentages and	and expressions,	Interpret	circles), areas of	data) in observational
	where n is a	percentage	including scientific	mathematical	circles and	and experimental
	positive or negative	changes as a	formulae	relationships both	composite shapes	contexts and illustrate
	integer or zero	fraction or a	Understand and use	algebraically and	Apply systematic	using scatter graphs
	Calculate with	decimal, interpret	the concepts and	geometrically	listing strategies	Use and interpret scatter
	roots, and with	these	vocabulary of	Derive and illustrate	Record, describe and	graphs of bivariate data;
	integer {and	multiplicatively,	expressions,	properties of	analyse the	recognise correlation
	fractional} indices	express one	equations,	triangles,	frequency of	and know that it does
	Calculate with	quantity as a	inequalities, terms	quadrilaterals,	outcomes of simple	not indicate causation;
	numbers in	percentage of	and factors	circles, and other	probability	draw estimated lines of
	standard for A x	another, compare		plane figures [for	experiments	best fit; make

- 10n, where 1≤A<10 and n is an integer
- Understand and use place value for decimals, measures and integers of any size
- Order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols =, ≠, , ≤, ≥
- •Use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative
- Use a calculator and other technologies to calculate results accurately and then

- two quantities
 using percentages,
 and work with
 percentages
 greater than 100%
 Interpret fractions
 and percentages as
 operators
- Understand and use place value for decimals, measures and integers of any size
- Order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols =, ≠, , ≤, ≥ Work
- interchangeably
 with terminating
 decimals and their
 corresponding
 fractions
 Identify and work
 with fractions in
 ratio problems

- •Simplify and manipulate algebraic expressions to maintain equivalence by:
- -Collecting like terms -Multiplying a single term over a bracket
- -Taking out common factors
- -Expanding products of two or more binomials
- Simplify and manipulate algebraic expressions (including those involving surds {and algebraic fractions})
 by:
- factorising quadratic expressions of the form x2 + bx + c, including the difference of two squares; {factorising quadratic expressions of the form ax2 + bx + c} - simplifying expressions involving

sums, products and

- example, equal lengths and angles] using appropriate language and technologies
- •Use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3D
- Use scale factors, scale diagrams and maps
- oldentify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids
- •Interpret and use fractional {and negative} scale factors for enlargement
- Apply the concepts of congruence and similarity, including the relationships

- involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale
- •Understand that the probabilities of all possible outcomes sum to 1
- Enumerate sets and unions/intersections of sets systematically, using
- tables, grids and
 Venn diagrams

 Generate theoretical
- sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities
- Apply the property that the probabilities of an exhaustive set of mutually exclusive events sum to one

- predictions; interpolate and extrapolate apparent trends whilst knowing the dangers of doing so
- Assess the validity of an argument and the accuracy of a given way of presenting information
- Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems
- Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial contexts
- Make and use connections between different parts of mathematics to solve problems
- Model situations mathematically and express the results using a range of formal mathematical

- interpret them appropriately
- Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation property
- Use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals
- Round numbers
 and measures to an
 appropriate degree
 of accuracy [for
 example, to a
 number of decimal
 places or significant
 figures]

- Use ratio notation, including reduction to simplest form
- to simplest form
 Divide a given
 quantity into two
 parts in a given
 part:part or
 part:whole ratio;
 express the
 division of a
 quantity into two
 parts as a ratio
 Understand that a
 multiplicative
 relationship
 between two
 quantities can be
 expressed as a
- ratio or a fraction

 Relate the
 language of ratios
 and the associated
 calculations to the
 arithmetic of
 fractions and to
 linear functions

 Solve problems
 involving direct

and inverse

proportion,

and algebraic

representations

including graphical

- powers, including the laws of indices

 Recognise and use
- Recognise and use relationships between operations including inverse operations
- Use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement)
- Where appropriate, interpret simple expressions as functions with inputs and outputs
- Order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols =, ≠, , ≤, ≥
- Appreciate the infinite nature of the sets of integers, real and rational numbers

- between lengths, {areas and volumes} in similar figures
- Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles
- Derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons
- Use mathematical language and properties precisely
- Reason deductively in geometry, number and algebra, including using geometrical constructions
 Develop their
- Develop their mathematical knowledge, in part through solving problems and evaluating the

- Calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions
- Describe, interpret and compare observed distributions of a single variable through: appropriate graphical representation involving discrete, continuous and grouped data and appropriate measures of central tendency (mean, mode, median) and spread (range, consideration of outliers) Interpret, analyse and compare the distributions of data sets from univariate

empirical

representations,
reflecting on how their
solutions may have been
affected by any
modelling assumptions
•Select appropriate
concepts, methods and
techniques to apply to
unfamiliar and
nonroutine problems;
interpret their solution
in the context of the
given problem

- •Use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation a<x≤b
- Apply and interpret limits of accuracy when rounding or truncating, {including upper and lower bounds}
- Interpret fractions and percentages as operators
- Express one quantity as a fraction of another, where the fraction is less than 1 and greater than 1
- Consolidate their numerical and mathematical capability from key stage 3 and extend their understanding of the number system and place value to include

- •Use a calculator and other technologies to calculate results accurately and then interpret them appropriately
 •Solve problems
- involving
 percentage
 change, including:
 percentage
 increase, decrease
 and original value
 problems and
 simple interest in
 financial
 mathematics
- •Interpret when the structure of a numerical problem requires additive, multiplicative or proportional reasoning
 •Develop their
- Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes,

- Apply and interpret limits of accuracy when rounding or truncating
- •Solve linear inequalities in one {or two} variable{s}, {and quadratic inequalities in one variable}; represent the solution on a number line, {using set notation and on a graph}
- •Generate terms of a sequence from either a term-to-term or a position-to-term rule •Recognise arithmetic
- sequences and find the nth term
 Recognise geometric sequences and
- sequences and appreciate other sequences that arise
 Recognise and use
- sequences of
 triangular, square
 and cube numbers,
 simple arithmetic
 progressions,
 Fibonacci type

- outcomes, including multi-step problems

 Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial contexts
- Make and use connections between different parts of mathematics to solve problems
- Model situations
 mathematically and
 express the results
 using a range of
 formal mathematical
 representations,
 reflecting on how
 their solutions may
 have been affected
 by any modelling
 assumptions
 Select appropriate
- Select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems; interpret their solution in the

- distributions through: -appropriate graphical representation involving discrete, continuous and grouped data {including box plots} -appropiate measures of central tendency (including modal class) and spread {including quartiles and inter-quartile range}
- •Apply statistics to describe a population
- Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems
 Develop their use of
- Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial contexts

	in aludina		and and afthe atress	a N dalsa and usa	
powers and roots	including	sequences, quadratic	context of the given	Make and use	
(and fractional	multi-step	sequences, and	problem	connections	
indices)	problems	simple geometric		between different	
Develop their	Develop their use	progressions		parts of	
mathematical	of formal	Deduce expressions		mathematics to	
knowledge, in part	mathematical	to calculate the nth		solve problems	
through solving	knowledge to	term of linear {and		Model situations	
problems and	interpret and solve	quadratic}		mathematically and	
evaluating the	problems,	sequences		express the results	
outcomes,	including in	Work with		using a range of	
including	financial contexts	coordinates in all		formal mathematical	
multi-step	Make and use	four quadrants		representations,	
problems	connections	Recognise, sketch		reflecting on how	
Develop their use	between different	and produce graphs		their solutions may	
of formal	parts of	of linear and		have been affected	
mathematical	mathematics to	quadratic functions		by any modelling	
knowledge to	solve problems	of one variable with		assumptions	
interpret and solve	Model situations	appropriate scaling,		Select appropriate	
problems, including	mathematically	using equations in x		concepts, methods	
in financial	and express the	and y and the		and techniques to	
contexts	results using a	Cartesian plane		apply to unfamiliar	
Make and use	range of formal	●Interpret		and nonroutine	
connections	mathematical	mathematical		problems; interpret	
between different	representations,	relationships both		their solution in the	
parts of	reflecting on how	algebraically and		context of the given	
mathematics to	their solutions may	graphically		problem	
solve problems	have been affected	Reduce a given			
 Model situations 	by any modelling	linear equation in			
mathematically and	assumptions	two variables to the			
express the results	Select appropriate	standard form y =			
using a range of	concepts, methods	mx + c; calculate and			
formal	and techniques to	interpret gradients			
mathematical	l '				
mathematical	apply to unfamiliar	and intercepts of			

representations,	and nonroutine	graphs of such linear	
reflecting on how	problems;	equations	
their solutions may	interpret their	•Use the form	
1			
have been affected	solution in the context of the	y=mx+c to identify parallel {and	
by any modelling			
assumptions	given problem	perpendicular} lines;	
•Select appropriate		find the equation of	
concepts, methods		the line through two	
and techniques to		given points, or	
apply to unfamiliar		through one point	
and nonroutine		with a given gradient	
problems; interpret		•Use standard units	
their solution in the		of mass, length,	
context of the		time, money and	
given problem		other measures,	
		including with	
		decimal quantities	
		Draw and measure	
		line segments and	
		angles in geometric	
		figures, including	
		interpreting scale	
		drawings	
		Describe, sketch and	
		draw using	
		conventional terms	
		and notations:	
		points, lines, parallel	
		lines, perpendicular	
		lines, right angles,	
		regular polygons,	
		and other polygons	
		that are reflectively	

	<u> </u>	
	and rotationally	
	symmetric	
	Change freely	
	between related	
	standard units [for	
	example time,	
	length, area,	
	volume/capacity,	
	mass]	
	●Extend their ability	
	to identify variables	
	and express relations	
	between variables	
	algebraically and	
	graphically	
	Develop their	
	mathematical	
	knowledge, in part	
	through solving	
	problems and	
	evaluating the	
	outcomes, including	
	multi-step problems	
	Develop their use of	
	formal mathematical	
	knowledge to	
	interpret and solve	
	problems, including	
	in financial contexts	
	Make and use	
	connections	
	between different	
	parts of	
L	I In a series I	

			mathematics to solve problems Model situations mathematically and express the results using a range of formal mathematical representations, reflecting on how their solutions may have been affected by any modelling assumptions Select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems; interpret their solution in the context of the given problem			
Topic	 Place Value and Powers Negative Numbers Multiples, Factors & Primes 	7. Calculating with Fractions 8. Percentages 9. FDP 10. Ratio & Proportion	12. Simplifying & Substitution 13. Solving Equations 14. Inequalities 15. Sequences	18. Angles 1 19. Properties of Shape 20. Similar & Congruent Shapes 21. Angles 2	22. Area & Perimeter 23. Volume 24. Probability 25. Averages	26. Representing Data

	4. Order of Operations 5. Rounding & Use of a Calculator 6. Fractions	11. Percentage Change	16. Coordinates & Graphs 17. Measuring & Converting Units			
Assessment	Formal Formative Assessment (based on KS2 NC) -Assessment in Week 6 Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Exit Tickets	Summative Assessment -DC1 Assessment in Week 13 Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks -Exit Tickets	Formal Formative Assessment -Assessment in Week 20 Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks -Exit Tickets	Formal Formative Assessment -Assessment in Week 25 Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks -Exit Tickets	Summative Assessment -DC2 End of Year Assessment in Weeks 35 & 36 Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks -Exit Tickets	Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks -Exit Tickets

Year 10	Terr	Term 1		Term 2		Term 3	
Crossover	HT1	HT2	HT3	HT4	HT5	HT6	

Key knowledge (NC driven)

- Use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximations
- Interpret and compare numbers in standard form a x 10n 1≤a<10. where n is a positive or negative integer or zero
- Use a calculator and other technologies to calculate results accurately and then interpret them appropriately
- •{Estimate powers and roots of any given positive number}
- Calculate with roots, and with integer indices

- Define percentage as 'number of parts per hundred', interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages, and work with percentages greater than 100%
- Interpret fractions and percentages as operators Understand and
- use place value for decimals. measures and integers of any size Order positive and negative integers, decimals and fractions; use the number line as a

- Use and interpret algebraic notation, including: ab in place of a \times b, 3y in place of y + y + y and $3 \times y$, a2 in place of $a \times a$, a3 in place of a × a × a, a2 b in place of a x $a \times b$, a/b in place of a ÷ b, coefficients written as fractions rather than as decimals, brackets
- Understand and use the concepts and vocabulary of expressions. equations, inequalities, terms and factors
- Simplify and manipulate algebraic expressions to maintain equivalence by: -Collecting like terms
- -Multiplying a single term over a bracket -Taking out common
- factors -Expanding products of two or more binomials

- Derive and apply formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids (including cubes)
- Use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3D
- Calculate surface areas and volumes of spheres, pyramids, cones and composite solids
- Describe, sketch and draw using conventional terms and notations: points, lines, parallel lines, perpendicular lines, right angles, regular polygons, and other polygons that are reflectively

- Use scale factors, scale diagrams and maps
- Compare lengths, areas and volumes using ratio notation and/or scale factors; make links to similarity
- Identify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids Apply angle facts,
- triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs Interpret and use fractional scale

factors for

enlargement

- Construct and interpret
 - appropriate tables, charts, and diagrams, including frequency tables, bar charts, pie charts, and pictograms for categorical data, and vertical line (or bar) charts for ungrouped and grouped numerical data
 - Describe simple mathematical relationships between two variables (bivariate data) in observational and experimental contexts and illustrate using scatter graphs Use and interpret scatter
 - graphs of bivariate data; recognise correlation and know that it does not indicate causation; draw estimated lines of best fit: make predictions; interpolate and extrapolate apparent trends whilst knowing the dangers of doing so
 - Assess the validity of an argument and the

- oCalculate with numbers in standard for A x 10ⁿ, where 1≤A<10 and n is an integer
- •Use the concepts and vocabulary of prime numbers, factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation. including using product notation and the unique factorisation property
- Use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative

- model for ordering of the real numbers; use the symbols =, \neq , , \leq , \geq Use the four
- operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative
- •Work interchangeably with terminating decimals and their corresponding fractions
- with fractions in ratio problems

 Use scale factors, scale diagrams an

•Identify and work

- scale diagrams and maps

 Use ratio notation,
- including reduction to simplest form

 Divide a given quantity into two

parts in a given

- Simplify and manipulate algebraic expressions (including those involving surds {and algebraic fractions})
 by:
- factorising quadratic expressions of the form x2 + bx + c, including the difference of two squares; {factorising quadratic expressions of the form ax2 + bx + c}
- simplifying expressions involving sums, products and powers, including the laws of indices
- Use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement)
- Where appropriate, interpret simple expressions as

- and rotationally symmetric
- Apply the properties of angles at a point, angles at a point on a straight line, vertically opposite angles
- Understand and use the relationship between parallel lines and alternate and corresponding angles
- Derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons
- Interpret
 mathematical
 relationships both
 algebraically and
 geometrically
- Use mathematical language and properties precisely
 Reason deductively
- Reason deductively in geometry, number and algebra,

- •Apply the concepts of congruence and similarity, including the relationships between lengths, in similar figures
- Use Pythagoras'
 Theorem and
 trigonometric ratios
 in similar triangles to
 solve problems
 involving
 right-angled
 triangles
- Interpret
 mathematical
 relationships both
 algebraically and
 geometrically
 Apply Pythagoras'
- Theorem and trigonometric ratios to find angles and lengths in right-angled triangles in two dimensional figures
- Apply systematic listing strategies
 Record describe
- Record, describe and analyse the frequency of outcomes of simple

accuracy of a given way of presenting information

Develop their

- mathematical
 knowledge, in part
 through solving
 problems and evaluating
 the outcomes, including
 multi-step problems
- Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial contexts
- Make and use connections between different parts of mathematics to solve problems
- Model situations
 mathematically and
 express the results using
 a range of formal
 mathematical
 representations,
 reflecting on how their
 solutions may have been
 affected by any
 modelling assumptions
 Select appropriate

concepts, methods and

- Use conventional notation for the priority of operations, including brackets, powers, roots and reciprocals
- Round numbers and measures to an appropriate degree of accuracy [for example, to a number of decimal places or significant figures]
- •Use approximation through rounding to estimate answers and calculate possible resulting errors expressed using inequality notation a<x≤b
- Apply and interpret limits of accuracy when rounding or truncating
- Interpret fractions and percentages as operators
- Express one quantity as a

- part:part or part:whole ratio; express the division of a quantity into two parts as a ratio

 Understand that a multiplicative
 - •Understand that a multiplicative relationship between two quantities can be expressed as a ratio or a fraction
- Relate the language of ratios and the associated calculations to the arithmetic of fractions and to linear functions
- Solve problems involving direct and inverse proportion, including graphical and algebraic representations
 Understand that X
- is inversely proportional to X is equivalent to X is proportional to 1/Y; interpret

- functions with inputs and outputs
- Order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols =, ≠, , ≤, ≥
- Appreciate the infinite nature of the sets of integers, real and rational numbers
- Apply and interpret limits of accuracy when rounding or truncating
- •Solve linear inequalities in one variable, represent the solution on a number line, {using set notation}
- •Generate terms of a sequence from either a term-to-term or a position-to-term rule

- including using geometrical constructions
- Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems
- Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial contexts
- Make and use connections between different parts of mathematics to solve problems
- Model situations mathematically and express the results using a range of formal mathematical representations, reflecting on how their solutions may have been affected

- probability
 experiments
 involving
 randomness,
 fairness, equally and
 unequally likely
 outcomes, using
 appropriate
 language and the 0-1
 probability scale
- Understand that the probabilities of all possible outcomes sum to 1
 Enumerate sets and
- unions/intersections of sets systematically, using tables, grids and Venn diagrams
- •Generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities
- Apply the property that the probabilities of an exhaustive set

techniques to apply to unfamiliar and nonroutine problems; interpret their solution in the context of the given problem

- fraction of another, where the fraction is less than 1 and greater than 1 Use the four operations,
- Use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative
- •Consolidate their numerical and mathematical capability from key stage 3 and extend their understanding of the number system and place value to include powers and roots
- •Select and use appropriate calculation strategies to solve increasingly complex problems, including exact calculations

- equations that describe direct and inverse proportion
- Use a calculator and other technologies to calculate results accurately and then interpret them appropriately

 Solve problems
- Solve problems involving percentage change, including: percentage increase, decrease and original value problems and simple interest in financial mathematics
- Set up, solve and interpret the answers in growth and decay problems, including compound interest
- including compound interest

 Use and interpret algebraic notation, including: ab in place of a × b, 3y in

- Recognise arithmetic sequences and find the nth term
- Recognise geometric sequences and appreciate other sequences that arise
- Recognise and use sequences of triangular, square and cube numbers, simple arithmetic progressions, Fibonacci type sequences, quadratic sequences, and simple geometric progressions
- Deduce expressions to calculate the nth term of linear sequences
- Substitute numerical values into formulae and expressions, including scientific formulae
- Model situations or procedures by translating them into algebraic expressions or

- by any modelling assumptions
- Select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems; interpret their solution in the context of the given problem
- of mutually exclusive events sum to one •Use a probability
- model to predict the outcomes of future experiments; understand that empirical unbiased samples tend towards theoretical probability distributions, with increasing sample size
- Calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions
- •{Calculate and interpret conditional probabilities through representation using expected frequencies with two-way tables, tree diagrams and Venn diagrams}

1	1		1	
involving multiples	place of y + y + y	formulae and by	• Describe, inte	rpret
of π (and surds),	and $3 \times y$, a2 in	using graphs	and compare	
use of standard	'	●Work with	observed	
form and	place of a \times a \times a,	coordinates in all	distributions of	
application and	a2 b in place of a ×	four quadrants	single variable	2
interpretation of	a × b, a/b in place	•Recognise, sketch	through: appr	opriate
limits of accuracy	of a ÷ b,	and produce graphs	graphical	
Develop their	coefficients written	of linear and	representation	n
mathematical	as fractions rather	quadratic functions	involving discr	rete,
knowledge, in part	than as decimals,	of one variable with	continuous an	d
through solving	brackets	appropriate scaling,	grouped data	and
problems and	Substitute	using equations in x	appropriate	
evaluating the	numerical values	and y and the	measures of c	entral
outcomes,	into formulae and	Cartesian plane	tendency (me	an,
including	expressions,	Interpret	mode, mediar	n) and
multi-step	including scientific	mathematical	spread (range	,
problems	formulae	relationships both	consideration	of
Develop their use	Understand and	algebraically and	outliers)	
of formal	use the concepts	graphically	●Infer propertie	es of
mathematical	and vocabulary of	Reduce a given	populations of	r
knowledge to	expressions,	linear equation in	distributions f	rom a
interpret and solve	equations,	two variables to the	sample, whilst	i l
problems, including	inequalities, terms	standard form y =	knowing the	
in financial	and factors	mx + c; calculate and	limitations of	
contexts	Simplify and	interpret gradients	sampling	
Make and use	manipulate	and intercepts of	Interpret, ana	lyse
connections	algebraic	graphs of such linear	and compare	the
between different	expressions to	equations	distributions of	of data
parts of	maintain	numerically,	sets from univ	variate
mathematics to	equivalence by:	graphically and	empirical	
solve problems	-Collecting like	algebraically	distributions	
 Model situations 	terms	•Use the form	through:	
mathematically and		y=mx+c to identify		

express the results	-Multiplying a	parallel {and	-appropriate
using a range of	single term over a	perpendicular} lines;	graphical
formal	bracket	find the equation of	representation
mathematical	-Taking out	the line through two	involving discrete,
representations,	common factors	given points, or	continuous and
reflecting on how	-Expanding	through one point	grouped data
their solutions may		with a given gradient	-appropiate
have been affected	more binomials	• Calculate and solve	measures of central
by any modelling	•Understand and	problems involving:	tendency (including
assumptions	use standard	perimeters of 2-d	modal class) and
•Select appropriate	mathematical	shapes (including	spread {including
concepts, methods	formulae;	circles), areas of	quartiles and
and techniques to	rearrange	circles and	inter-quartile range}
apply to unfamiliar	formulae to	composite shapes	•Apply statistics to
and nonroutine	change the subject	Derive and illustrate	describe a
problems; interpre		properties of	population
their solution in the	' '	triangles,	Extend and formalise
context of the	algebraic	quadrilaterals,	their knowledge of
given problem	expressions	circles, and other	ratio and proportion,
given problem	(including those	plane figures [for	including
	involving surds	example, equal	trigonometric ratios,
	•	1 ' ' '	1 ° ' 1
	{and algebraic	lengths and angles]	in working with
	fractions)) by:	using appropriate	measures and
	- factorising	language and	geometry, and in
	quadratic	technologies	working with
	expressions of the	•Identify and apply	proportional
	form $x^2 + bx + c$,	circle definitions and	relations
	including the	properties,	algebraically and
	difference of two	including: centre,	graphically
	squares;	radius, chord,	Make and test
	{factorising	diameter,	conjectures about
	quadratic	circumference,	the generalisations
ı	i	1	I that underlie

expr	ressions of the	tangent, arc, sector	patterns and
form	m ax2 + bx + c}	and segment	relationships; look
- sim	mplifying	Calculate arc	for proofs or
expr	ressions	lengths, angles and	counter-examples;
invo	olving sums,	areas of sectors of	begin to use algebra
proc	ducts and	circles	to support and
pow	vers, including	Extend their ability	construct arguments
the I	laws of indices	to identify variables	(and proofs)
Know	ow the	and express relations	Reason deductively
diffe	erence	between variables	in geometry, number
betv	ween an	algebraically and	and algebra,
equa	lation and an	graphically	including using
iden	ntity; argue	Select and use	geometrical
matl	thematically to	appropriate	constructions
show	w algebraic	calculation strategies	Explore what can
expr	ressions are	to solve increasingly	and cannot be
equi	ivalent, and	complex problems,	inferred in statistical
use	algebra to	including exact	and probabilistic
supp	port and	calculations	settings, and express
cons	struct	involving multiples	their arguments
argu	uments	of π	formally
●Inter	erpret when the	Develop their	Develop their
struc	ucture of a	mathematical	mathematical
num	merical problem	knowledge, in part	knowledge, in part
requ	uires additive,	through solving	through solving
mult	Itiplicative or	problems and	problems and
prop	portional	evaluating the	evaluating the
reas	soning	outcomes, including	outcomes, including
Deve	elop their	multi-step problems	multi-step problems
matl	thematical	Develop their use of	Develop their use of
knov	wledge, in part	formal mathematical	formal mathematical
thro	ough solving	knowledge to	knowledge to
prob	blems and	interpret and solve	interpret and solve

evaluating the	problems, including	problems, including
outcomes,	in financial contexts	in financial contexts
	Make and use	Make and use
multi-step	connections	connections
problems	between different	between different
Develop their use	parts of	parts of
of formal	mathematics to	mathematics to
mathematical	solve problems	solve problems
knowledge to	Model situations	Model situations
interpret and solve	mathematically and	mathematically and
problems,	express the results	express the results
including in	using a range of	using a range of
financial contexts	formal mathematical	formal mathematical
•Make and use	representations,	representations,
connections	reflecting on how	reflecting on how
between different	their solutions may	their solutions may
parts of	have been affected	have been affected
mathematics to	by any modelling	by any modelling
solve problems	assumptions	assumptions
Model situations	Select appropriate	Select appropriate
mathematically	concepts, methods	concepts, methods
and express the	and techniques to	and techniques to
results using a	apply to unfamiliar	apply to unfamiliar
range of formal	and nonroutine	and nonroutine
mathematical	problems; interpret	problems; interpret
representations,	their solution in the	their solution in the
reflecting on how	context of the given	context of the given
their solutions may	problem	problem
have been affected		
by any modelling		
assumptions		
Select appropriate		
concepts, methods		

Topic	1. Indices & Standard Form 2. Product of Prime Factors, HCF & LCM 3. Order of Operations 4. Rounding & Use of a Calculator 5. Fractions 6. Calculating with Fractions	and techniques to apply to unfamiliar and nonroutine problems; interpret their solution in the context of the given problem 7. Percentages 8. FDP 9. Ratio 10. Proportion 11. Percentage Change 12. Simplifying & Substitution	13. Expanding & Factorising 14. Solving Equations 15. Inequalities 16. Sequences 17. Equation of a Straight Line 18. Area & Circles	19. Surface Area 20. Volume 21. Angles 1 22. Angles 2	23. Similar & Congruent Shapes 24. Pythagoras 25. Trigonometry 26. Probability 27. Averages	28. Representing Data
Addisorted	Assessment (based on KS2 NC) -Assessment in Week 6	Assessment -DC1 Assessment in Week 13	Assessment -Assessment in Week 20	Assessment -Assessment in Week 25	Assessment -DC2 End of Year Assessment in Weeks 35 & 36	Assessment -Use of whiteboards during lessons

Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Use of Assessment -Use of whiteboards -Use of during lessons questioning (no -Targeted hands up) questioning (no -Live marking and -Hor	Assessment Le of whiteboards Ling lessons Lestioning (no Lestioning (no Lestioning (no Lestioning and Lestionin	-Use of whiteboards lessons during lessons -Targeted questioning (no up) -Live marking and lck ework Tasks -Homework Ta	(no hands up) -Live marking and feedback -Homework Tasks -Exit Tickets
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Year 10	Term 1		Term 2		Term 3	
Higher	HT1	HT2	HT3	HT4	HT5	HT6

Key knowledge (NC driven)

- •Use the concepts and vocabulary of prime numbers. factors (or divisors), multiples, common factors, common multiples, highest common factor, lowest common multiple, prime factorisation, including using product notation and the unique factorisation property
- •Use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative
- negative

 Define percentage as 'number of parts per hundred', interpret percentages and percentage

- Use scale factors, scale diagrams and maps
- Use ratio notation, including reduction to simplest form
 Divide a given quantity into two parts in a given part:part or part:whole ratio;
- express the division of a quantity into two parts as a ratio

 Understand that a
- multiplicative relationship between two quantities can be expressed as a ratio or a fraction Relate the language of ratios
- and the associated calculations to the arithmetic of fractions and to linear functions
 Solve problems
- Solve problems involving direct and inverse proportion,

- Substitute numerical values into formulae and expressions, including scientific formulae
- Model situations or procedures by translating them into algebraic expressions or formulae and by using graphs
 Work with
- coordinates in all four quadrants
 •Recognise, sketch and produce graphs of linear and quadratic functions of one variable with appropriate scaling, using equations in x and y and the
- Cartesian plane
 Interpret
 mathematical
 relationships both
 algebraically and
 graphically
 Reduce a given
- graphically
 Reduce a given
 linear equation in
 two variables to the
 standard form y =

- •Apply angle facts, triangle congruence, similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to
- obtain simple proofs

 Use Pythagoras'
 Theorem and
 trigonometric ratios
 in similar triangles to
 solve problems
 involving
 right-angled
- Interpret mathematical relationships both algebraically and geometrically

triangles

Apply Pythagoras'
 Theorem and trigonometric ratios to find angles and lengths in right-angled triangles {and where possible, general

- Derive and use the sum of angles in a triangle and use it to deduce the angle sum in any polygon, and to derive properties of regular polygons
 Identify and
- oldentify and construct congruent triangles, and construct similar shapes by enlargement, with and without coordinate grids

 Apply angle facts,

triangle congruence,

similarity and properties of quadrilaterals to derive results about angles and sides, including Pythagoras' Theorem, and use known results to obtain simple proofs
•Interpret and use fractional {and negative} scale

factors for

enlargement

- •{Construct and interpret diagrams for grouped discrete data and continuous data ie histograms with equal and unequal class intervals and cumulative frequency graphs, and know their appropriate use}
- use} Interpret, analyse and compare the distributions of data sets from univariate empirical distributions through: -appropriate graphical representation involving discrete, continuous and grouped data (including box plots} -appropiate measures of central tendency (including modal class) and spread (including quartiles and inter-quartile range} Apply statistics to
- Apply statistics to describe a population
 Develop their mathematical knowledge, in part through solving

problems and evaluating

changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a percentage of another, compare two quantities using percentages, and work with percentages greater than 100% •Interpret fractions

operators

Use a calculator
and other
technologies to
calculate results
accurately and then
interpret them
appropriately

and percentages as

Solve problems

 involving
 percentage change,
 including:
 percentage
 increase, decrease
 and original value
 problems and
 simple interest in

including graphical and algebraic representations

- •Understand that X is inversely proportional to X is equivalent to X is proportional to 1/Y; {construct and} interpret equations that describe direct and inverse proportion
- as 'number of parts per hundred', interpret percentages and percentage changes as a fraction or a decimal, interpret these multiplicatively, express one quantity as a

percentage of

two quantities

and work with

percentages

another, compare

using percentages,

greater than 100%

mx + c; calculate and interpret gradients and intercepts of graphs of such linear equations numerically, graphically and algebraically

•Use the form

- y=mx+c to identify parallel {and perpendicular} lines; find the equation of the line through two given points, or through one point with a given gradient
- •Solve linear inequalities in one {or two} variable{s}, {and quadratic inequalities in one variable}; represent the solution on a number line, {using set notation and on a graph}
- Find approximate solutions to contextual problems from given graphs of a variety of functions, including

triangles} in two
{and three}
dimensional figures
Derive and apply

- formulae to calculate and solve problems involving: perimeter and area of triangles, parallelograms, trapezia, volume of cuboids (including cubes) and other prisms (including cylinders)
- Use the properties of faces, surfaces, edges and vertices of cubes, cuboids, prisms, cylinders, pyramids, cones and spheres to solve problems in 3D
 Calculate surface
- areas and volumes of spheres, pyramids, cones and composite solids

 Calculate surface
- Calculate surface areas and volumes of spheres, pyramids, cones and composite solids

 Apply the concepts of congruence and similarity, including the relationships between lengths, {areas and volumes} in similar figures

Use Pythagoras'
 Theorem and trigonometric ratios in similar triangles to solve problems involving right-angled triangles

Apply Pythagoras'

- Theorem and trigonometric ratios to find angles and lengths in right-angled triangles {and where possible, general triangles} in two {and three}
- •Know the exact values of $\sin\theta$ and $\cos\theta$ for θ = 00, 300, 450, 600 and 900; know the exact value for $\tan\theta$ for θ = 00, 300, 450 and 600

dimensional figures

- the outcomes, including multi-step problems
 Develop their use of
- Develop their use of formal mathematical knowledge to interpret and solve problems, including in financial contexts
- Make and use connections between different parts of mathematics to solve problems
- Model situations
 mathematically and
 express the results using
 a range of formal
 mathematical
 representations,
 reflecting on how their
 solutions may have been
 affected by any
 modelling assumptions
 Select appropriate
- concepts, methods and techniques to apply to unfamiliar and nonroutine problems; interpret their solution in the context of the given problem

- financial mathematics
- •Set up, solve and interpret the answers in growth and decay problems, including compound interest {and work with general iterative processes}
- •Use integer powers and associated real roots (square, cube and higher), recognise powers of 2, 3, 4, 5 and distinguish between exact representations of roots and their decimal approximations
- •Interpret and compare numbers in standard form a x 10n 1≤a<10, where n is a positive or negative integer or zero
- •{Estimate powers and roots of any

- Interpret fractions and percentages as operators
- Identify and work with fractions in ratio problems
 Express one quantity as a fraction of another,
- where the fraction is less than 1 and greater than 1
 Solve problems involving
- percentage change, including: percentage increase, decrease and original value problems and simple interest in

financial

mathematics

■Use and interpret algebraic notation, including: ab in place of a × b, 3y in place of y + y + y and 3 × y, a2 in place of a × a, a3 in place of a × a × a, a2 b in place of a ×

 $a \times b$, a/b in place

- piece-wise linear, exponential and reciprocal graphs
- Identify and interpret roots, intercepts and turning points of quadratic functions graphically; deduce roots algebraically
 Recognise, sketch
- and produce graphs of linear and quadratic functions, simple cubic functions, the reciprocal function y=1/x with x≠0

 Simplify and
- manipulate algebraic expressions (including those involving surds {and algebraic fractions}) by:
- factorising quadratic expressions of the form x2 + bx + c, including the difference of two squares; {factorising quadratic

- Understand and use the relationship between parallel lines and alternate and corresponding angles
- Use mathematical language and properties precisely
- Make and test conjectures about the generalisations that underlie patterns and relationships; look for proofs or counter-examples; begin to use algebra to support and construct arguments
- (and proofs)

 Reason deductively in geometry, number and algebra, including using geometrical
- constructions

 Develop their
 mathematical
 knowledge, in part
 through solving
 problems and
 evaluating the

- Record, describe and analyse the frequency of outcomes of simple probability experiments involving randomness, fairness, equally and unequally likely outcomes, using appropriate language and the 0-1 probability scale

 Understand that the
- Understand that the probabilities of all possible outcomes sum to 1
 Enumerate sets and
- unions/intersections of sets systematically, using tables, grids and Venn diagrams
- •Generate theoretical sample spaces for single and combined events with equally likely, mutually exclusive outcomes and use these to calculate theoretical probabilities

- given positive number}
- Calculate with roots, and with integer {and fractional} indices
- Calculate with numbers in standard for A x
 10n, where 1≤A<10 and n is an integer
- Calculate exactly with fractions $\{surds\}$ and multiples of π ; $\{simplify surd expressions involving squares [for example <math>\sqrt{12} = \sqrt{(4 \times 3)} = \sqrt{4 \times \sqrt{3}} = 2\sqrt{3}$] and rationalise denominators}
- {change recurring decimals into their corresponding fractions and vice versa}
- Consolidate their numerical and mathematical capability from key stage 3 and extend

- of a ÷ b,
 coefficients written
 as fractions rather
 than as decimals,
 brackets
 Understand and
 use the concepts
- and vocabulary of expressions, equations, inequalities, terms
- and factors
 Understand and
 use standard
 mathematical
 formulae;
 rearrange
 formulae to
- Use algebraic methods to solve linear equations in one variable (including all forms that require rearrangement)

change the subject

Where

 appropriate,
 interpret simple
 expressions as
 functions with
 inputs and outputs

- expressions of the form ax2 + bx + c}
 simplifying expressions involving sums, products and powers, including the laws of indices
 Solve quadratic
- equations {including those that require rearrangement} algebraically by factorising, {by completing the square and by using the quadratic formula}; find approximate solutions using a graph
- •Generate terms of a sequence from either a term-to-term or a position-to-term rule
- Recognise arithmetic sequences and find the nth term
 Recognise geometric sequences and
- Recognise geometric sequences and appreciate other sequences that arise

outcomes, including multi-step problems
• Develop their use of formal mathematical knowledge to interpret and solve

problems, including

- in financial contexts

 Make and use
 connections
 between different
 parts of
 mathematics to
 solve problems
- Model situations mathematically and express the results using a range of formal mathematical representations, reflecting on how their solutions may have been affected by any modelling assumptions
- assumptions
 Select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems; interpret their solution in the

- Apply the property that the probabilities of an exhaustive set of mutually exclusive events sum to one
- •Use a probability model to predict the outcomes of future experiments; understand that empirical unbiased samples tend towards theoretical probability distributions, with increasing sample size
- Calculate the probability of independent and dependent combined events, including using tree diagrams and other representations, and know the underlying assumptions
 {Calculate and
- •{Calculate and interpret conditional probabilities through representation using expected frequencies with

their understanding	Translate simple	Recognise and use	context of the given	two-way tables, tree	
of the number	situations or	sequences of	problem	diagrams and Venn	
system and place	procedures into	triangular, square	problem	diagrams}	
value to include	•			•Use mathematical	
I I	algebraic	and cube numbers,			
powers and roots	expressions or	simple arithmetic		language and	
(and fractional	formulae; derive	progressions,		properties precisely	
indices)	an equation (or	Fibonacci type		Extend and formalise	
•Select and use	two simultaneous	sequences, quadratic		their knowledge of	
appropriate	equations), solve	sequences, and		ratio and proportion,	
calculation	the equation(s)	simple geometric		including	
strategies to solve	and interpret the	progressions (rn		trigonometric ratios,	
increasingly	solution	where n is an		in working with	
complex problems,	Use linear and	integer, and r is a		measures and	
including exact	quadratic graphs	positive rational		geometry, and in	
calculations	to estimate values	number {or a surd})		working with	
involving multiples	of y for given	{and other		proportional	
of π (and surds),	values of x and	sequences}		relations	
use of standard	vice versa and to	Deduce expressions		algebraically and	
form and	find approximate	to calculate the nth		graphically	
application and	solutions of	term of linear {and		Reason deductively	
interpretation of	simultaneous	quadratic}		in geometry, number	
limits of accuracy	linear equations	sequences		and algebra,	
Interpret when the	Solve two	Calculate and solve		including using	
structure of a	simultaneous	problems involving:		geometrical	
numerical problem	egations in two	perimeters of 2-d		constructions	
requires additive,	variables	shapes (including		Explore what can	
multiplicative or	(linear/linear {or	circles), areas of		and cannot be	
proportional	linear/quadratic})	circles and		inferred in statistical	
reasoning	algebraically; find	composite shapes		and probabilistic	
Develop their	-	Identify and apply		settings, and express	
mathematical	solutions using a	circle definitions and		their arguments	
knowledge, in part	graph	properties,		formally	
through solving	0 - 1	including: centre,		,	

nuchlams and Cimplify and	radius shard	• Dayalan thair
problems and Simplify and	radius, chord,	Develop their mathematical
evaluating the manipulate	diameter,	mathematical
outcomes, algebraic	circumference,	knowledge, in part
including expressions to	tangent, arc, sector	through solving
multi-step maintain	and segment	problems and
problems equivalence by:	Calculate arc	evaluating the
Develop their use -Collecting like	lengths, angles and	outcomes, including
of formal terms	areas of sectors of	multi-step problems
mathematical -Multiplying a	circles	Develop their use of
knowledge to single term over a	Move freely	formal mathematical
interpret and solve bracket	between different	knowledge to
problems, including -Taking out	numerical, algebraic,	interpret and solve
in financial common factors	graphical and	problems, including
contexts -Expanding	diagrammatic	in financial contexts
Make and use products of two or	representations,	Make and use
connections more binomials	including of linear,	connections
between different Simplify and	quadratic, reciprocal,	between different
parts of manipulate	(exponential and	parts of
mathematics to algebraic	trigonometric)	mathematics to
solve problems expressions	functions	solve problems
 Model situations (including those 	Consolidate their	Model situations
mathematically and involving surds	algebraic capability	mathematically and
express the results {and algebraic	from key stage 3, to	express the results
using a range of fractions}) by:	include quadratic	using a range of
formal -factorising	equations,	formal mathematical
mathematical quadratic	simultaneous	representations,
representations, expressions of the	equations and	reflecting on how
reflecting on how form x2 + bx + c,	inequalities	their solutions may
their solutions may including the	Develop their	have been affected
have been affected difference of two	mathematical	by any modelling
by any modelling squares;	knowledge, in part	assumptions
assumptions {factorising	through solving	•Select appropriate
quadratic	problems and	concepts, methods

 Select appropriate 	expressions of the	evaluating the	and techniques to	
concepts, methods	form ax2 + bx + c}	outcomes, including	apply to unfamiliar	
	·	multi-step problems	and nonroutine	
and techniques to	- simplifying			
apply to unfamiliar	·	Develop their use of	problems; interpret	
and nonroutine	involving sums,	formal mathematical	their solution in the	
problems; interpret	products and	knowledge to	context of the given	
their solution in the	powers, including	interpret and solve	problem	
context of the	the laws of indices	problems, including		
given problem	Extend their ability	in financial contexts		
	,	Make and use		
	variables and	connections		
	express relations	between different		
	between variables	parts of		
	algebraically and	mathematics to		
	graphically	solve problems		
	Interpret when the	Model situations		
	structure of a	mathematically and		
	numerical problem	express the results		
	requires additive,	using a range of		
	multiplicative or	formal mathematical		
	proportional	representations,		
	reasoning	reflecting on how		
	Develop their	their solutions may		
	mathematical	have been affected		
	knowledge, in part	by any modelling		
	through solving	assumptions		
		Select appropriate		
	evaluating the	concepts, methods		
	outcomes,	and techniques to		
	including	apply to unfamiliar		
	multi-step	and nonroutine		
	problems	problems; interpret		
	'	their solution in the		

Develop their u	se context of the given
of formal	problem
mathematical	
knowledge to	
interpret and s	plve
problems,	
including in	
financial contex	rts
• Make and use	
connections	
between differ	ent
parts of	
mathematics to	
solve problems	
•Model situation	ns
mathematically	
and express the	
results using a	
range of forma	
mathematical	
representation	
reflecting on ho	
their solutions	
have been affe	
by any modellii	ng
assumptions	
•Select appropri	
concepts, meth	
and techniques	
apply to unfam	
and nonroutine	
problems;	
interpret their	

Topic	1. Product of Prime Factors, HCF & LCM 2. Calculating with Fractions 3. Percentage Change 4. Indices & Standard Form 5. Surds 6. Recurring Decimals	solution in the context of the given problem 7. Ratio 8. Proportion 9. Fractions, Percentages & Ratio 10. Solving Equations & Rearranging 11. Simultaneous Equations 12. Expanding & Factorising	13. Equation of a Straight Line 14. Inequalities & Regions 15. Non-Linear Graphs 16. Solving Quadratic Equations 17. Linear & Quadratic Sequences 18. Circles & Sectors	19. Pythagoras 20. Surface Area & Volume 21. Angles 1	22. Angles 2 23. Similar & Congruent Shapes 24. Exact Trig Values & Trigonometry 25. Probability	26. Box Plots & Cumulative Frequency 27. Histograms
Assessment	Formal Formative Assessment	Summative Assessment	Formal Formative Assessment	Formal Formative Assessment	Summative Assessment	Informal Formative Assessment
	(based on KS2 NC)	-DC1 Assessment	-Assessment in	-Assessment in	-DC2 End of Year	-Use of whiteboards
	-Assessment in	in Week 13	Week 20	Week 25	Assessment in	during lessons
	Week 6	Informal	Informal Formative	Informal Formative	Weeks 35 & 36	-Targeted questioning
	Informal Formative	Formative	Assessment	Assessment	Informal Formative	(no hands up)
	Assessment	Assessment			Assessment	(112 1131133 3.5)

-Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Exit Tickets	-Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks -Exit Tickets	-Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks -Exit Tickets	-Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks -Exit Tickets	-Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks -Exit Tickets	-Live marking and feedback -Homework Tasks -Exit Tickets
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Year 11	Term 1		Term 2		Term 3	
Foundation	HT1	HT2	HT3	HT4	HT5	HT6

Key	•Use the concepts	•Use and interpret	•Use the four	• Record, describe and	
knowledge	and vocabulary of	algebraic notation,	operations, including	analyse the	
(NC	prime numbers,	including: ab in	formal written	frequency of	
`	factors (or divisors),	place of a × b, 3y in	methods, applied to	outcomes of simple	
driven)	multiples, common	place of a × b, 5y iii		probability	
	• •	1 ' ' '	integers, decimals,	l ' ' '	
	factors, common	and 3 × y, a2 in	proper and improper	experiments	
	multiples, highest	place of a × a, a3 in	fractions, and mixed	involving	
	common factor,	place of a × a × a,	numbers, all both	randomness,	
	lowest common	a2 b in place of a ×	positive and	fairness, equally and	
	multiple, prime	a × b, a/b in place	negative	unequally likely	
	factorisation,	· '	 Use standard units 	outcomes, using	
	including using	coefficients written	of mass, length,	appropriate	
	product notation	as fractions rather	time, money and	language and the 0-1	
	and the unique	than as decimals,	other measures,	probability scale	
	factorisation	brackets	including with	Understand that the	
	property	Substitute	decimal quantities	probabilities of all	
	Use integer powers	numerical values	Round numbers and	possible outcomes	
	and associated real	into formulae and	measures to an	sum to 1	
	roots (square, cube	expressions,	appropriate degree	Enumerate sets and	
	and higher),	including scientific	of accuracy [for	unions/intersections	
	recognise powers	formulae	example, to a	of sets	
	of 2, 3, 4, 5 and	Understand and	number of decimal	systematically, using	
	distinguish	use the concepts	places or significant	tables, grids and	
	between exact	and vocabulary of	figures]	Venn diagrams	
	representations of	expressions,	 Use a calculator and 	Generate theoretical	
	roots and their	equations,	other technologies	sample spaces for	
	decimal	inequalities, terms	to calculate results	single and combined	
	approximations	and factors	accurately and then	events with equally	
	Calculate with	Simplify and	interpret them	likely, mutually	
	roots, and with	manipulate	appropriately	exclusive outcomes	
	integer {and		• Model situations or	and use these to	
	fractional} indices	expressions to	procedures by	calculate theoretical	
			translating them into	probabilities	

<u> </u>	1	i	,	
●Express one	maintain	algebraic	Apply the property	
quantity as a	equivalence by:	expressions or	that the probabilities	
fraction of another,	-Collecting like	formulae and by	of an exhaustive set	
where the fraction	terms	using graphs	of mutually exclusive	
is less than 1 and	-Multiplying a	Interpret	events sum to one	
greater than 1	single term over a	mathematical	Use a probability	
Use the four	bracket	relationships both	model to predict the	
operations,	-Taking out	algebraically and	outcomes of future	
including formal	common factors	graphically	experiments;	
written methods,	-Expanding	Plot and interpret	understand that	
applied to integers,	products of two or	graphs (including	empirical unbiased	
decimals, proper	more binomials	reciprocal graphs	samples tend	
and improper	Model situations	{and exponential	towards theoretical	
fractions, and	or procedures by	graphs}) and graphs	probability	
mixed numbers, all	translating them	of non-standard	distributions, with	
both positive and	into algebraic	functions in real	increasing sample	
negative	expressions or	contexts, to find	size	
Interpret fractions	formulae and by	approximate	Calculate the	
and percentages as	using graphs	solutions to	probability of	
operators	Use algebraic	problems such as	independent and	
Define percentage	methods to solve	simple kinematic	dependent	
as 'number of parts	linear equations in	problems involving	combined events,	
per hundred',	one variable	distance, speed and	including using tree	
interpret	(including all forms	acceleration	diagrams and other	
percentages and	that require	Translate simple	representations, and	
percentage	rearrangement)	situations or	know the underlying	
changes as a	•Work with	procedures into	assumptions	
fraction or a	coordinates in all	algebraic	Construct and	
decimal, interpret	four quadrants	expressions or	interpret	
these	Recognise, sketch	formulae; derive an	appropriate tables,	
multiplicatively,	and produce	equation (or two	charts, and	
express	graphs of linear	simultaneous	diagrams, including	
	and quadratic	equations), solve the	frequency tables, bar	

 Use a calculator	functions of one	equation(s) and	charts, pie charts,		
and other	variable with	interpret the	and pictograms for		
technologies to	appropriate	solution	categorical data, and		
calculate results	scaling, using	Draw and measure	vertical line (or bar)		
accurately and then	equations in x and	line segments and	charts for ungrouped		
interpret them	y and the Cartesian	angles in geometric	and grouped		
appropriately	plane	figures, including	numerical data		
Solve problems	●Interpret	interpreting scale	Describe simple		
involving	mathematical	drawings	mathematical		
percentage change,	relationships both	Identify properties	relationships		
including:	algebraically and	of, and describe the	between two		
percentage	graphically	results of,	variables (bivariate		
increase, decrease	Reduce a given	translations,	data) in		
and original value	linear equation in	rotations and	observational and		
problems and	two variables to	reflections applied	experimental		
simple interest in	the standard form	to given figures	contexts and		
financial	y = mx + c;	 Apply the properties 	illustrate using		
mathematics	calculate and	of angles at a point,	scatter graphs		
Understand and	interpret gradients	angles at a point on	Interpret and		
use place value for	and intercepts of	a straight line,	construct tables and		
decimals, measures	graphs of such	vertically opposite	line graphs for time		
and integers of any	linear equations	angles	series data		
size	Simplify and	Understand and use	Infer properties of		
Order positive and	manipulate	the relationship	populations or		
negative integers,	algebraic	between parallel	distributions from a		
decimals and	expressions by:	lines and alternate	sample, whilst		
fractions; use the	- simplifying	and corresponding	knowing the		
number line as a	expressions	angles	limitations of		
model for ordering	involving sums,	Derive and use the	sampling		
of the real	products and	sum of angles in a	Use and interpret		
numbers; use the	powers, including	triangle and use it to	scatter graphs of		
symbols =, ≠, , ≤, ≥	the laws of indices	deduce the angle	bivariate data;		
		sum in any polygon.	recognise correlation	l l	

• Work	Where	and to derive	and know that it	
interchangeably	appropriate,	properties of regular	does not indicate	
with terminating	interpret simple	polygons	causation; draw	
decimals and their	expressions as	Construct and	estimated lines of	
	functions with		best fit; make	
corresponding fractions		interpret plans and elevations of 3D	'	
	inputs and outputs Use the form		predictions;	
•Identify and work		shapes	interpolate and	
with fractions in	y=mx+c to identify	Move freely	extrapolate apparent	
ratio problems	parallel {and	between different	trends whilst	
 Use ratio notation, 	perpendicular}	numerical, algebraic,	knowing the dangers	
including reduction	lines; find the	graphical and	of doing so	
to simplest form	equation of the	diagrammatic	Develop their	
Divide a given	line through two	representations,	mathematical	
quantity into two	given points, or	including of linear,	knowledge, in part	
parts in a given	through one point	quadratic, reciprocal,	through solving	
part:part or	with a given	(exponential and	problems and	
part:whole ratio;	gradient	trigonometric)	evaluating the	
express the division	Extend their ability	functions	outcomes, including	
of a quantity into	to identify	Use mathematical	multi-step problems	
two parts as a ratio	variables and	language and	●Develop their use of	
Understand that a	express relations	properties precisely	formal mathematical	
multiplicative	between variables	Reason deductively	knowledge to	
relationship	algebraically and	in geometry, number	interpret and solve	
between two	graphically	and algebra,	problems, including	
quantities can be	Develop their	including using	in financial contexts	
expressed as a ratio	mathematical	geometrical	Make and use	
or a fraction	knowledge, in part	constructions	connections	
Relate the language	through solving	Develop their	between different	
of ratios and the	problems and	mathematical	parts of	
associated	evaluating the	knowledge, in part	mathematics to	
calculations to the	outcomes,	through solving	solve problems	
arithmetic of	including	problems and	Model situations	
		evaluating the	mathematically and	

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fractions and to	multi-step	outcomes, including	express the results	
linear functions	problems	multi-step problems	using a range of	
Solve problems	Develop their use	Develop their use of	formal mathematical	
involving direct and	of formal	formal mathematical	representations,	
inverse proportion,	mathematical	knowledge to	reflecting on how	
including graphical	knowledge to	interpret and solve	their solutions may	
and algebraic	interpret and solve	problems, including	have been affected	
representations	problems,	in financial contexts	by any modelling	
Consolidate their	including in	Make and use	assumptions	
numerical and	financial contexts	connections	Select appropriate	
mathematical	Make and use	between different	concepts, methods	
capability from key	connections	parts of	and techniques to	
stage 3 and extend	between different	mathematics to	apply to unfamiliar	
their understanding	parts of	solve problems	and nonroutine	
of the number	mathematics to	Model situations	problems; interpret	
system and place	solve problems	mathematically and	their solution in the	
value to include	Model situations	express the results	context of the given	
powers and roots	mathematically	using a range of	problem	
(and fractional	and express the	formal mathematical		
indices)	results using a	representations,		
Interpret when the	range of formal	reflecting on how		
structure of a	mathematical	their solutions may		
numerical problem	representations,	have been affected		
requires additive,	reflecting on how	by any modelling		
multiplicative or	their solutions may	assumptions		
proportional	have been affected	Select appropriate		
reasoning	by any modelling	concepts, methods		
Develop their	assumptions	and techniques to		
mathematical	Select appropriate	apply to unfamiliar		
knowledge, in part	concepts, methods	and nonroutine		
through solving	and techniques to	problems; interpret		
problems and	apply to unfamiliar	their solution in the		
evaluating the	and nonroutine			

outcomes,	problems;	context of the given		
including	interpret their	problem		
multi-step	solution in the			
problems	context of the			
Develop their use	given problem			
of formal				
mathematical				
knowledge to				
interpret and solve				
problems, including				
in financial				
contexts				
Make and use				
connections				
between different				
parts of				
mathematics to				
solve problems				
Model situations				
mathematically and				
express the results				
using a range of				
formal				
mathematical				
representations,				
reflecting on how				
their solutions may				
have been affected				
by any modelling				
assumptions				
•Select appropriate				
concepts, methods				
and techniques to				

	apply to unfamiliar and nonroutine problems; interpret their solution in the context of the given problem				
Topic	1. Types of	7. Simplifying &	11. Money & Time	17. Probability	
	Number	Substitution	12. Angles	18. Representing	
	2. Fractions	8. Expanding &	13. Plans &	Data	
	3. Calculating	Factorising	Elevations		
	with Fractions	9. Solving	14. Symmetry		
	4. Percentages	Equations	15.		
	5. FDP	10. Linear Graphs	Transformations		
	6. Ratio &	Graphs	16. Real Life		
	Proportion		Graphs		
Assessment	Summative	Summative	Summative	Summative	
	Assessment	Assessment	Assessment	Assessment	
	-Mock Exams in	-Mock Exams in	-Mock Exams in	-Mock Exams in	
	Weeks 10 & 11	Weeks 10 & 11	Weeks 22 & 23	Weeks 22 & 23	
	Informal Formative	Informal	Informal Formative	Informal Formative	
	Assessment	Formative	Assessment	Assessment	
	-Use of	Assessment	-Use of whiteboards	-Use of whiteboards	
	whiteboards during lessons	-Use of whiteboards	during lessons	during lessons -Targeted	
	16220112	during lessons	-Targeted questioning (no	questioning (no	
		daring icosons	hands up)	hands up)	

hands up) -Live marking and feedback -Exit Tickets -Exit Tickets -Exit Tickets -Exit Tickets -Exit Tickets -Homework Tasks -Exit Tickets -Exit Tickets
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Year 11	Ter	m 1	Ter	m 2	Te	erm 3
Crossover	HT1	HT2	HT3	HT4	HT5	HT6
Key	Order positive and	Use and interpret	Change freely	Understand that the		
knowledge	negative integers,	algebraic notation,	between related	probabilities of all		
(NC	decimals and	including: ab in	standard units [for	possible outcomes		
driven)	fractions; use the	place of a × b, 3y in	example time,	sum to 1		
,	number line as a	place of y + y + y	length, area,	Enumerate sets and		
	model for ordering	and 3 × y, a2 in	volume/capacity,	unions/intersections		
	of the real	place of a × a, a3 in	mass]	of sets		
	numbers; use the	place of a \times a \times a,	Use compound units	systematically, using		
	symbols $=$, \neq , $, \leq$, \geq	a2 b in place of a ×	such as speed, unit	tables, grids and		
	Use the four	a × b, a/b in place	pricing and density	Venn diagrams		
	operations,	of a ÷ b,	to solve problems	 Generate theoretical 		
	including formal	coefficients written	●Convert between	sample spaces for		
	written methods,	as fractions rather	related compound	single and combined		
	applied to integers,	than as decimals,	units (speed, rates of	events with equally		
	decimals, proper	brackets	pay, prices, density,	likely, mutually		
	and improper	Understand and	pressure) in	exclusive outcomes		
	fractions, and	use the concepts	numerical and	and use these to		
	mixed numbers, all	and vocabulary of	algebraic contexts	calculate theoretical		
	both positive and	expressions,	Draw and measure	probabilities		
	negative	equations,	line segments and	Apply the property		
	Use integer powers	inequalities, terms	angles in geometric	that the probabilities		
	and associated real	and factors	figures, including	of an exhaustive set		
	roots (square, cube	Understand and	interpreting scale	of mutually exclusive		
	and higher),	use standard	drawings	events sum to one		
	recognise powers	mathematical	Derive and use the	Use a probability		
	of 2, 3, 4, 5 and	formulae;	standard ruler and	model to predict the		
	distinguish	rearrange	compass	outcomes of future		
	between exact	formulae to	constructions	experiments;		
	representations of	change the subject	(perpendicular	understand that		
	roots and their		bisector of a line	empirical unbiased		

decimal	• Model situations	segment,	samples tend	
approximations	or procedures by	constructing a	towards theoretical	
•Interpret and	translating them	perpendicular to a	probability	
compare numbers	into algebraic	given line from/at a	distributions, with	
in standard form a	expressions or	given point,	increasing sample	
x 10n 1≤a<10,	formulae and by	bisecting a given	size	
where n is a	using graphs	angle); recognise	Calculate the	
positive or negative		and use the	probability of	
integer or zero	methods to solve	perpendicular	independent and	
• Define percentage	linear equations in	distance from a	dependent	
as 'number of parts	· ·	point to a line as the	combined events,	
per hundred',	(including all forms	shortest distance to	including using tree	
interpret	that require	the line	diagrams and other	
percentages and	rearrangement)	•Identify properties	representations, and	
percentage	•Interpret	of, and describe the	know the underlying	
changes as a	mathematical	results of,	assumptions	
fraction or a	relationships both	translations,	•{Calculate and	
decimal, interpret	algebraically and	rotations and	interpret conditional	
these	graphically	reflections applied	probabilities through	
multiplicatively,	Use linear and	to given figures	representation using	
express one	quadratic graphs	 Understand and use 	expected	
quantity as a	to estimate values	the relationship	frequencies with	
percentage of	of y for given	between parallel	two-way tables, tree	
another, compare	values of x and	lines and alternate	diagrams and Venn	
two quantities	vice versa and to	and corresponding	diagrams}	
using percentages,	find approximate	angles	Construct and	
and work with	solutions of	•Use Pythagoras'	interpret	
percentages	simultaneous	Theorem and	appropriate tables,	
greater than 100%	linear equations	trigonometric ratios	charts, and	
Interpret fractions	Find approximate	in similar triangles to	diagrams, including	
and percentages as	solutions to	solve problems	frequency tables, bar	
operators	contextual	involving	charts, pie charts,	
	problems from		and pictograms for	

Round numbers	given graphs of a	right-angled	categorical data, and	
and measures to an	variety of	triangles	vertical line (or bar)	
appropriate degree	functions,	Interpret and use	charts for ungrouped	
of accuracy [for	including	fractional {and	and grouped	
example, to a	piece-wise linear,	negative} scale	numerical data	
number of decimal	exponential and	factors for	Describe simple	
places or significant	reciprocal graphs	enlargement	mathematical	
figures]	Simplify and	•{Describe the	relationships	
Use approximation	manipulate	changes and	between two	
through rounding	algebraic	invariance achieved	variables (bivariate	
to estimate	expressions	by combinations of	data) in	
answers and	(including those	rotations, reflections	observational and	
calculate possible	involving surds	and translations}	experimental	
resulting errors	{and algebraic	Construct and	contexts and	
expressed using	fractions}) by:	interpret plans and	illustrate using	
inequality notation	- factorising	elevations of 3D	scatter graphs	
a <x≤b< td=""><td>quadratic</td><td>shapes</td><td>Infer properties of</td><td></td></x≤b<>	quadratic	shapes	Infer properties of	
Use a calculator	expressions of the	Interpret and use	populations or	
and other	form $x2 + bx + c$,	bearings	distributions from a	
technologies to	including the	Apply Pythagoras'	sample, whilst	
calculate results	difference of two	Theorem and	knowing the	
accurately and then	squares;	trigonometric ratios	limitations of	
interpret them	{factorising	to find angles and	sampling	
appropriately	quadratic	lengths in	Use and interpret	
Calculate with	expressions of the	right-angled	scatter graphs of	
roots, and with	form ax2 + bx + c}	triangles {and where	bivariate data;	
integer {and	- simplifying	possible, general	recognise correlation	
fractional} indices	expressions	triangles} in two	and know that it	
Calculate with	involving sums,	{and three}	does not indicate	
numbers in	products and	dimensional figures	causation; draw	
standard for A x	powers, including	Know the exact	estimated lines of	
10n, where 1≤A<10	the laws of indices	values of sinθ and	best fit; make	
and n is an integer	rearrangement)	$\cos\theta$ for θ = 00, 300,	predictions;	

1	are and a	- 14/1	45 . 60 100		
	,	Where	45o, 60o and 90o;	interpolate and	١
	n fractions in	appropriate,	know the exact value	extrapolate apparent	l
	problems	interpret simple	for $\tan \theta$ for $\theta = 0$ o,	trends whilst	l
1 ' '	ly and interpret	expressions as	30o, 45o and 60o	knowing the dangers	l
	ts of accuracy		Describe translations	of doing so	l
	en rounding or	inputs and outputs		Explore what can	l
	0.	, , , , , , , , , , , , , , , , , , ,	Apply addition and	and cannot be	l
_ ·	luding upper	interpret roots,	subtraction of	inferred in statistical	l
	lower bounds}	intercepts and	vectors,	and probabilistic	l
●Use	scale factors,	turning points of	multiplication of	settings, and express	l
scale	e diagrams and	quadratic	vectors by a scalar,	their arguments	l
map	os	functions	and diagrammatic	formally	l
●Expr	ress one	graphically;	and column	 Assess the validity of 	l
quai	ntity as a	deduce roots	representations of	an argument and the	l
fract	tion of another,	algebraically {and	vectors; {use vectors	accuracy of a given	l
whe	ere the fraction	turning points by	to construct	way of presenting	l
is le	ss than 1 and	completing the	geometric	information	l
grea	ater than 1	square}	arguments and	Develop their	l
∙Use	ratio notation,	Recognise, sketch	proofs}	mathematical	l
inclu	uding reduction	and produce	Extend and formalise	knowledge, in part	l
to si	implest form	graphs of linear	their knowledge of	through solving	l
• Divid	de a given	and quadratic	ratio and proportion,	problems and	l
quai	ntity into two	functions, simple	including	evaluating the	l
	s in a given	cubic functions,	trigonometric ratios,	outcomes, including	l
part	:part or	the reciprocal	in working with	multi-step problems	l
part	:whole ratio;	function y=1/x	measures and	Develop their use of	l
I '	ress the division	with x≠0	geometry, and in	formal mathematical	l
	quantity into	Plot and interpret	working with	knowledge to	l
	parts as a ratio	graphs (including	proportional	interpret and solve	l
I .	lerstand that a	reciprocal graphs	relations	problems, including	l
I	tiplicative	{and exponential	algebraically and	in financial contexts	l
	tionship	graphs}) and	,	Make and use	
	ween two	graphs of	G. 26	connections	
DCtv	WCCII two	grapiis or		connections	

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quantities can be	non-standard	Make and test	between different	
expressed as a ratio	functions in real	conjectures about	parts of	١
or a fraction	contexts, to find	the generalisations	mathematics to	١
 Relate the language 	approximate	that underlie	solve problems	l
of ratios and the	solutions to	patterns and	Model situations	١
associated	problems such as	relationships; look	mathematically and	l
calculations to the	simple kinematic	for proofs or	express the results	l
arithmetic of	problems involving	counter-examples;	using a range of	l
fractions and to	distance, speed	begin to use algebra	formal mathematical	l
linear functions	and acceleration	to support and	representations,	l
Solve problems	Solve quadratic	construct arguments	reflecting on how	١
involving	equations	(and proofs)	their solutions may	l
percentage change,	{including those	Reason deductively	have been affected	l
including:	that require	in geometry, number	by any modelling	l
percentage	rearrangement}	and algebra,	assumptions	l
increase, decrease	algebraically by	including using	 Select appropriate 	l
and original value	factorising, {by	geometrical	concepts, methods	l
problems and	completing the	constructions	and techniques to	l
simple interest in	square and by	Develop their	apply to unfamiliar	l
financial	using the quadratic	mathematical	and nonroutine	l
mathematics	formula}; find	knowledge, in part	problems; interpret	١
Solve problems	approximate	through solving	their solution in the	
involving direct and	solutions using a	problems and	context of the given	١
inverse proportion,	graph	evaluating the	problem	l
	•Solve two	outcomes, including	'	l
and algebraic	simultaneous	multi-step problems		l
representations	egations in two	Develop their use of		l
Understand that X	variables	formal mathematical		١
is inversely	(linear/linear {or	knowledge to		١
proportional to X is	linear/quadratic})	interpret and solve		l
equivalent to X is	algebraically; find	problems, including		l
proportional to 1/Y;	approximate	in financial contexts		
{construct and}	аррголинасс	in initialicial contexts		
[construct and]			1	_

1	I	
		Make and use
	• .	connections
	· ·	between different
1 ' '		parts of
1	l '	mathematics to
1	algebraic	solve problems
answers in growth	expressions or	Model situations
and decay	formulae; derive	mathematically and
problems, including	an equation (or	express the results
compound interest	two simultaneous	using a range of
{and work with	equations), solve	formal mathematical
general iterative	the equation(s)	representations,
processes}	and interpret the	reflecting on how
Consolidate their	solution	their solutions may
numerical and	Consolidate their	have been affected
mathematical	algebraic capability	by any modelling
capability from key	from key stage 3,	assumptions
1 ' ' '		Select appropriate
their understanding	quadratic	concepts, methods
of the number	1 '	and techniques to
system and place	simultaneous	apply to unfamiliar
value to include	eguations and	and nonroutine
powers and roots		problems; interpret
'	l ·	their solution in the
,	between different	context of the given
· ·	numerical.	problem
	<i>'</i>	-
1 '' '		
_	I '	
• .		
1	1 '	
_		
	problems, including compound interest {and work with general iterative processes} • Consolidate their numerical and mathematical capability from key stage 3 and extend their understanding of the number system and place	that describe direct and inverse proportion Set up, solve and interpret the answers in growth and decay problems, including compound interest {and work with general iterative processes} Consolidate their numerical and mathematical capability from key stage 3 and extend their understanding of the number system and place value to include powers and roots (and fractional indices) Select and use appropriate calculation strategies to solve increasingly complex problems, including exact Translate simple situations or procedures into algebraic expressions or formulae; derive an equation (or two simultaneous equations), solve the equation(s) and interpret the solution Consolidate their algebraic capability from key stage 3, to include quadratic equations, simultaneous equations and inequalities Move freely between different numerical, algebraic, graphical and diagrammatic representations, including of linear, quadratic, reciprocal,

involving multiples	trigonometric)	
1	functions	
	Extend their ability	
	to identify	
	variables and	
1 '''		
1 '	express relations	
1 ' 1	between variables	
· 1	algebraically and	
I	graphically	
I	Develop their	
	mathematical	
I I	knowledge, in part	
	through solving	
1 1 1	problems and	
	evaluating the	
l l	outcomes,	
	including	
	multi-step	
I ' I	problems	
1 1 1 1	Develop their use	
j j	of formal	
•	mathematical	
Develop their	knowledge to	
I I	interpret and solve	
knowledge, in part	problems,	
through solving	including in	
problems and	financial contexts	
evaluating the	Make and use	
outcomes,	connections	
including	between different	
multi-step	parts of	
problems	mathematics to	
· ·	solve problems	

Davidon the invest	• Madal situations		
l '	Model situations		
I I	mathematically		
	and express the		
1 - 1	results using a		
I '	range of formal		
	mathematical		
	representations,		
I I	reflecting on how		
	their solutions may		
l l	have been affected		
between different	by any modelling		
l '	assumptions		
mathematics to	Select appropriate		
solve problems	concepts, methods		
Model situations	and techniques to		
mathematically and	apply to unfamiliar		
express the results	and nonroutine		
using a range of	problems;		
formal	interpret their		
mathematical	solution in the		
representations,	context of the		
reflecting on how	given problem		
their solutions may			
have been affected			
by any modelling			
assumptions			
 Select appropriate 			
concepts, methods			
and techniques to			
apply to unfamiliar			
and nonroutine			
problems; interpret			
their solution in the			

	context of the given problem				
Topic	1. Bounds & Error Intervals 2. Calculating with Standard Form 3. Calculating with Fractions 4. Percentages 5. Ratio 6. Proportion 7. Percentages, Fractions & Ratio	8. Solving Equations & Rearranging 9. Simultaneous Equations 10. Non-Linear Graphs 11. Solving Quadratic Equations	12. Compound Measures 13. Constructions & Loci 14. Bearings 15. Plans & Elevations 16. Transformations 17. Vectors 18. Exact Trig Values & Trigonometry	19. Probability 20. Representing Data	
Assessment	Summative Assessment -Mock Exams in Weeks 10 & 11 Informal Formative Assessment -Use of whiteboards during lessons	Summative Assessment -Mock Exams in Weeks 10 & 11 Informal Formative Assessment -Use of whiteboards during lessons	Summative Assessment -Mock Exams in Weeks 22 & 23 Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up)	Summative Assessment -Mock Exams in Weeks 22 & 23 Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up)	

hands up) -Live marking and feedback -Exit Tickets -Exit Tickets -Exit Tickets -Exit Tickets -Exit Tickets -Homework Tasks -Exit Tickets -Exit Tickets -Homework Tasks -Exit Tickets
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Year 11	Ter	m 1	Ter	m 2	Te	erm 3
Higher B	HT1	HT2	НТ3	HT4	HT5	HT6
Key	Order positive and	Use linear and	Change freely	Understand that the		
knowledge	negative integers,	quadratic graphs	between related	probabilities of all		
(NC	decimals and	to estimate values	standard units [for	possible outcomes		
driven)	fractions; use the	of y for given	example time,	sum to 1		
,	number line as a	values of x and	length, area,	Enumerate sets and		
	model for ordering	vice versa and to	volume/capacity,	unions/intersections		
	of the real	find approximate	mass]	of sets		
	numbers; use the	solutions of	Use compound units	systematically, using		
	symbols =, \neq , , \leq , \geq	simultaneous	such as speed, unit	tables, grids and		
	Use the four	linear equations	pricing and density	Venn diagrams		
	operations,	Simplify and	to solve problems	Generate theoretical		
	including formal	manipulate	Convert between	sample spaces for		
	written methods,	algebraic	related compound	single and combined		
	applied to integers,	expressions	units (speed, rates of	events with equally		
	decimals, proper	(including those	pay, prices, density,	likely, mutually		
	and improper	involving surds	pressure) in	exclusive outcomes		
	fractions, and	{and algebraic	numerical and	and use these to		
	mixed numbers, all	fractions}) by:	algebraic contexts	calculate theoretical		
	both positive and	- factorising	Draw and measure	probabilities		
	negative	quadratic	line segments and	Apply the property		
	Round numbers	expressions of the	angles in geometric	that the probabilities		
	and measures to an	form $x2 + bx + c$,	figures, including	of an exhaustive set		
	appropriate degree	including the	interpreting scale	of mutually exclusive		
	of accuracy [for	difference of two	drawings	events sum to one		
	example, to a	squares;	Derive and use the	Use a probability		
	number of decimal	{factorising	standard ruler and	model to predict the		
	places or significant	quadratic	compass	outcomes of future		
	figures]	expressions of the	constructions	experiments;		
	Use approximation	form ax2 + bx + c}	(perpendicular	understand that		
	through rounding		bisector of a line	empirical unbiased		

Linari		I	1	
to estimate	- simplifying	segment,	samples tend	
answers and	expressions	constructing a	towards theoretical	l
calculate possible	involving sums,	perpendicular to a	probability	l
resulting errors	products and	given line from/at a	distributions, with	l
expressed using	powers, including	given point,	increasing sample	l
inequality notation	the laws of indices	bisecting a given	size	l
a <x≤b< td=""><td>Identify and</td><td>angle); recognise</td><td>Calculate the</td><td>l</td></x≤b<>	Identify and	angle); recognise	Calculate the	l
Apply systematic	interpret roots,	and use the	probability of	l
listing strategies	intercepts and	perpendicular	independent and	l
{including use of	turning points of	distance from a	dependent	l
the product rule for	quadratic	point to a line as the	combined events,	l
counting}	functions	shortest distance to	including using tree	l
Apply and interpret	graphically;	the line	diagrams and other	l
limits of accuracy	deduce roots	Identify properties	representations, and	l
when rounding or	algebraically {and	of, and describe the	know the underlying	l
truncating,	turning points by	results of,	assumptions	l
{including upper	completing the	translations,	•{Calculate and	l
and lower bounds}	square}	rotations and	interpret conditional	l
Use and interpret	Solve quadratic	reflections applied	probabilities through	l
algebraic notation,	equations	to given figures	representation using	l
including: ab in		Understand and use	expected	l
place of a × b, 3y in	that require	the relationship	frequencies with	l
place of $y + y + y$	rearrangement}	between parallel	two-way tables, tree	l
and 3 × y, a2 in	algebraically by	lines and alternate	diagrams and Venn	l
place of a × a, a3 in	factorising, {by	and corresponding	diagrams}	l
place of a \times a \times a,	completing the	angles	Explore what can	l
a2 b in place of a ×		Apply angle facts,	and cannot be	l
a × b, a/b in place	using the quadratic	triangle congruence,	inferred in statistical	l
of a ÷ b,	formula}; find	similarity and	and probabilistic	l
coefficients written	approximate	properties of	settings, and express	l
as fractions rather		quadrilaterals to	their arguments	l
	solutions using a	derive results about	_	l
than as decimals,	graph		formally	l
brackets		angles and sides,		L

Simplify and	Solve two	including	• Assess the validity of	
manipulate	simultaneous	Pythagoras'	an argument and the	
algebraic	egations in two	Theorem, and use	accuracy of a given	
expressions to	variables	known results to	way of presenting	
maintain	(linear/linear {or	obtain simple proofs	information	
equivalence by:	linear/quadratic})	•Use Pythagoras'	•Infer properties of	
-Collecting like	algebraically; find	Theorem and	populations or	
terms	approximate	trigonometric ratios	distributions from a	
-Multiplying a	solutions using a	in similar triangles to	sample, whilst	
single term over a		solve problems	knowing the	
bracket	graph	'	limitations of	l
	• Translate simple	involving		l
-Taking out	situations or	right-angled	sampling	l
common factors	procedures into	triangles	•{Construct and	
-Expanding	algebraic	•Interpret	interpret diagrams	
products of two or	expressions or	mathematical	for grouped discrete	
more binomials	formulae; derive	relationships both	data and continuous	l
Use algebraic	an equation (or	algebraically and	data ie histograms	
methods to solve	two simultaneous	geometrically	with equal and	l
linear equations in	equations), solve	Interpret and use	unequal class	l
one variable	the equation(s)	fractional {and	intervals and	
(including all forms	and interpret the	negative} scale	cumulative	
that require	solution	factors for	frequency graphs,	
rearrangement)	Identify and apply	enlargement	and know their	
Simplify and	circle definitions	•{Describe the	appropriate use}	
manipulate	and properties,	changes and	Interpret, analyse	
algebraic	including: centre,	invariance achieved	and compare the	
expressions	radius, chord,	by combinations of	distributions of data	
(including those	diameter,	rotations, reflections	sets from univariate	
involving surds	circumference,	and translations}	empirical	
{and algebraic	tangent, arc, sector	Interpret and use	distributions	
fractions}) by:	and segment	bearings	through:	
- factorising	•{Apply and prove	•Apply Pythagoras'	-appropriate	
quadratic	standard circle	Theorem and	graphical	

expressions of the theorems trigonometric ratios representation
form x2 + bx + c, concerning angles, to find angles and involving discrete,
including the radii, tangents and lengths in continuous and
difference of two chords, and use right-angled grouped data
squares; them to prove triangles {and where {including box plots}
{factorising related results} possible, general •-appropiate
quadratic •Consolidate their triangles} in two measures of central
expressions of the algebraic capability {and three} tendency (including
form ax2 + bx + c} from key stage 3, dimensional figures modal class) and
- simplifying to include •{Know and apply the spread {including
expressions quadratic sine rule, a/sinA = quartiles and
involving sums, equations, b/sinB = c/sinC and inter-quartile range}
products and simultaneous cosine rule, a2 = b2 + Apply statistics to
powers, including equations and c2 - 2bc cosA, to find describe a
the laws of indices inequalities unknown lengths population
●Know the ●Move freely and angles} ●Develop their
difference between different •{Know and apply mathematical
an equation and an numerical, Area = 1/2ab sinC to knowledge, in part
identity; argue algebraic, graphical calculate the area, through solving
mathematically to and diagrammatic sides or angles of problems and
show algebraic representations, any triangle} evaluating the
expressions are including of linear, Describe translations outcomes, including
equivalent, and use quadratic, as 2D vectors multi-step problems
algebra to support reciprocal, •Apply addition and •Develop their use of
and construct (exponential and subtraction of formal mathematical
arguments (and trigonometric) vectors, knowledge to
proofs} functions multiplication of interpret and solve
•Where appropriate, •Extend their ability vectors by a scalar, problems, including
interpret simple to identify and diagrammatic in financial contexts
expressions as variables and and column • Make and use
functions with express relations representations of connections
inputs and outputs; between variables vectors; {use vectors between different
{interpret the to construct parts of

reverse process as the 'inverse function'; interpret the succession of two functions as a 'composite function'} •{Find approximate solutions to equations numerically using iteration} •Solve problems involving direct and inverse proportion al adgebraic representations •Understand that X is inversely proportional to X is equivalent to X is proportion al interpret equations that describe direct and inverse proportion •Move freely between different numerical, algebraic, graphical and diagrammatic and the generalisations that dunderlie proofs) •Model situations mathematican their knowledge of ratio and propofs) •Extend and formalise their knowledge of ratio and proportion, including graphical and proofs or counter-examples; begin to use algebra to support and algebraic, graphical and diagrammatic and proofs) •Extend and formalise their knowledge of ratio and proportion, including graphical that underlie pationships; look for proofs or counter-examples; begin to use algebra to support and construct arguments (and proofs) •Extend and formalise their knowledge of ratio and proportion, including with express the results using a range of formal mathematical trepre sults using a range of formal mathematical wither knowking with express the results using a range of formal mathematical wither knowking with express the results using a range of formal mathematical wither knowking with express the results using a range of formal mathematical wither knowking with express the results using a range of formal mathematical wither knowking with express the results using a range of formal mathematical wither knowking with express the results using a range of Move for proofs or counter-examples; begin to use algebra; on the did proofs) •Select appropriate content of the given by any modelling assumption of the graph of the proposition of the graph of the proo		1		1	_
function'; interpret the succession of two functions as a 'composite function'} Find approximate solutions to equations numerically using iteration} Solve problems involving direct and inverse proportion, including graphical and algebraic representations Understand that X is inversely proportional to 1/Y; {construct and} interpret equations that describe direct and inverse proportion Make and test conjectures about the generalisations that underlie rationships; look for proofs or counter-examples; begin to use algebra to support and construct arguments (and proofs) whake and test conjectures about the generalisations that underlie representations equivalent to X is proportional to 1/Y; {construct and} interpret equations that describe direct and inverse proportion Make and test conjectures about the generalisations that fers in working with measures and geometry, and in working with proportional arguments (and proportion, including solution to suspeport and construct arguments (and proportion, including with geometry, and in working with measures and geometry, and in working with measures and seemery, and in working with proportional algebra to support and construct arguments (and proportion, including solutions to equations to counter-examples; begin to use algebra that underlie rationships; look for proofs or conjectures about the generalisations their knowledge of ratio and proportion, including working with measures and working with were proportional assumptions Solve problems and deductively in geometry, number and algebra, including using geometry, number and algebra, including using geometry, number and algebra, including using for proofs or counter-examples; begin to use algebra to support and construct arguments (and proofs) occupants. The problems and evaluating the outcomes, including problems and evaluating the outcomes, including or their mathematical knowledge, in part through solving problems and evaluating the outcomes, including or the solution of protional and construct arguments	'	,			
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two functions as a 'composite function'?	, ·		1 '		
'composite function'} •{Find approximate solutions to equations to equations numerically using iteration} •Solve problems involving direct and inverse proportion, including graphical and algebraic representations •Understand that X is inversely proportional to X is equivalent to X is proportional to 1/Y; {construct and inverse proportion al interpret equations that describe direct and inverse proportion •Move freely between different numerical, algebraic, graphical •Move freely between different numerical, algebraic, graphical •(Find approximate solutions 'relationships; look for proofs or counter-examples; begin to use algebra to support and construct and part through solving problems and evaluating the outcomes, including trigonometric ratios, in working with measures and geometry, and in working with measures trigonometric ratios, in working with measures and geometry, and in working with measures and sewers, in working with measures and geometry, and in working with measures and sewers, and their solutions may have been affected by any modelling assumptions •Make and test conjectures about the generalisations that underlie and construct and proportional to using a range of formal mathematical representations, reflecting on how working with measures and geometry, and in working with measures and geometry, and in working with measures and sewers and their solutions may have been affected by any modelling assumptions •Make and test conjectures about the generalisations that underlie and nonroutine problems; look for proofs or counter-examples; begin to use algebra to support and construct arguments (and proofs) •Solve problems and eyaluating the outcomes, including problems and trigonometric ratios, in working with measures and their solutions may have been affected working with proportional only it is a proportional and to support to unfamiliar trigonometric ratios, in work		conjectures about	Extend and formalise	mathematically and	l
function'} •{Find approximate solutions to equations to equations numerically using iteration} •Solve problems involving direct and inverse proportion, including graphical and algebraic representations •Understand that X is inversely proportional to X is equivalent to X is proportional to 1/Y; {construct and inverse equations that describe direct and inverse proportion •Move freely between different numerical, algebraic, graphical algebraic, graphical or location for proofs or counter-examples; begin to use algebra to support and construct arguments (and proofs) begin to use algebra to support working with measures and geometry, and in working with working with measures and geometry, and in working with working with measures and geometry, and in working with measures and geometry, and in working with measures and geometry, and in working with working with measures and geometry, and in working with working	two functions as a	the generalisations	their knowledge of		l
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inverse proportion, including graphical and algebraic representations • Understand that X is inversely proportional to X is equivalent to X is proportional to 1/Y; {construct and} interpret equations that describe direct and inverse proportion • Move freely between different numerical, algebraic, graphical • Including graphical • Reason deductively in geometry, number and algebra, including using geometry, number and algebra, including using geometrical constructions begin to use algebra to support and construct arguments (and proofs) • Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems • Conjectures about the generalisations and techniques to apply to unfamiliar and nonroutine problems; interpret their solution in the context of the given problems • Consepts, methods and techniques to apply to unfamiliar and nonroutine problems; interpret to support and construct arguments (and proofs) • Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including • Move freely outcomes, including • Proofs) • Concepts, methods and techniques to apply to unfamiliar and nonroutine problems; interpret their solution in the context of the given problem • Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including	Solve problems	and construct	proportional	assumptions	l
including graphical and algebraic representations •Understand that X is inversely proportional to X is proportional to 1/Y; {construct and} interpret equations that describe direct and inverse proportion •Move freely between different numerical, algebraic, graphical •Reason deductively in geometry, number and algebra, including using geometry, number and algebra, including using geometrical constructions proportion deductively in geometry, number and algebra, including using geometrical constructions begin to use algebra to support and construct arguments (and proofs) •Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including problems and evaluating the outcomes, including problems outcomes, including outcomes, including problems including problems outcomes, including outcomes, i	involving direct and	arguments (and	Make and test	 Select appropriate 	l
and algebraic representations •Understand that X is inversely proportional to X is equivalent to X is proportional to 1/Y; {construct and} interpret equations that describe direct and inverse proportion •Move freely between different numerical, algebraic, graphical	inverse proportion,	proofs)	conjectures about	concepts, methods	l
representations Understand that X is inversely proportional to X is equivalent to X is proportional to 1/Y; {construct and} interpret equations that describe direct and inverse proportion Move freely between different numerical, algebraic, graphical Understand that X is geometry, number and algebra, including using geometrical counter-examples; begin to use algebra to support and construct arguments (and proofs) to support and construct arguments (and proofs) Through solving problems and evaluating the outcomes, including problems and evaluating the algebraic, graphical	including graphical	Reason	the generalisations	and techniques to	l
 Understand that X is inversely proportional to X is equivalent to X is proportional to 1/Y; {construct and} interpret equations that describe direct and inverse proportion Move freely between different numerical, algebraic, graphical Understand that X is including using geometrical counter-examples; begin to use algebra to support and construct arguments (and proofs) Wowledge, in part through solving problems and evaluating the outcomes, including problems Including using geometrical counter-examples; begin to use algebra to support and construct arguments (and proofs) Wowledge, in part through solving problems and evaluating the outcomes, including problems 	and algebraic	deductively in	that underlie	apply to unfamiliar	l
is inversely proportional to X is equivalent to X is proportional to 1/Y; {construct and} interpret equations that describe direct and inverse proportion • Move freely between different numerical, algebraic, graphical is inversely proportional to X is geometrical constructions begin to use algebra to support and construct arguments (and proofs) to support and construct arguments (and proofs) • Develop their mathematical (and proofs) • Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including problems and evaluating the outcomes, including outcomes, including outcomes, including outcomes, including	representations	geometry, number	patterns and	and nonroutine	l
proportional to X is equivalent to X is proportional to 1/Y; {construct and} interpret equations that describe direct and inverse proportion • Move freely between different numerical, algebraic, graphical proportional to X is equivalent to X is proportions begin to use algebra to support and construct arguments (and proofs) though solving problems and evaluating the outcomes, including problems and evaluating the outcomes, including problems and evaluating the outcomes, including problems counter-examples; begin to use algebra to support and construct arguments (and proofs) • Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including	Understand that X	and algebra,	relationships; look	problems; interpret	l
proportional to X is equivalent to X is proportional to 1/Y; {construct and} interpret equations that describe direct and inverse proportion • Move freely between different numerical, algebraic, graphical proportional to X is equivalent to X is proportions poewelop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including multi-step problems counter-examples; begin to use algebra to support and construct arguments (and proofs) • Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including problems and evaluating the outcomes, including	is inversely	including using	for proofs or	their solution in the	l
equivalent to X is proportional to 1/Y; {construct and} interpret equations that describe direct and inverse proportion • Move freely between different numerical, algebraic, graphical • Constructions Develop their to support and construct arguments (and proofs) • Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including problems and evaluating the outcomes, including problems	proportional to X is	geometrical	counter-examples;	context of the given	l
{construct and} interpret equations that describe direct and inverse proportion evaluating the Move freely between different numerical, algebraic, graphical mathematical knowledge, in part through solving problems and evaluating the outcomes, including problems construct arguments (and proofs) Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including		constructions	begin to use algebra	problem	l
{construct and} mathematical knowledge, in part through solving proportion evaluating the hother different numerical, algebraic, graphical problems and problems and numerical, algebraic, graphical problems and problems and numerical, and inverse problems and evaluating the construct arguments (and proofs) Develop their mathematical knowledge, in part through solving problems and evaluating the outcomes, including	proportional to 1/Y;	Develop their	to support and	'	l
that describe direct and inverse problems and proportion evaluating the outcomes, between different numerical, algebraic, graphical problems and through solving problems and evaluating the outcomes, including problems and evaluating the outcomes, including problems			· ·		l
that describe direct and inverse problems and proportion evaluating the outcomes, between different numerical, algebraic, graphical problems and evaluating the outcomes, including problems and evaluating the outcomes, including problems outcomes, including problems	interpret equations	knowledge, in part	(and proofs)		l
and inverse problems and proportion evaluating the outcomes, between different numerical, algebraic, graphical problems and problems and evaluating the and problems outcomes, including problems outcomes, including problems			' '		l
proportion Move freely between different numerical, algebraic, graphical evaluating the evaluating the outcomes, including multi-step problems knowledge, in part through solving problems and evaluating the outcomes, including	and inverse		'		l
 Move freely between different numerical, algebraic, graphical outcomes, including problems problems through solving problems and evaluating the outcomes, including 		· ·	knowledge, in part		l
between different including problems and numerical, multi-step evaluating the algebraic, graphical problems outcomes, including	' '	ŭ			l
numerical, multi-step evaluating the algebraic, graphical problems outcomes, including	,	, and the second			l
algebraic, graphical problems outcomes, including			l '		l
	·	· ·	_		
	and diagrammatic		multi-step problems		

	1	
representations,	· '	• Develop their use of
including of linear,	of formal	formal mathematical
quadratic,	mathematical	knowledge to
reciprocal,	knowledge to	interpret and solve
(exponential and	interpret and solve	problems, including
trigonometric)	problems,	in financial contexts
functions	including in	Make and use
Extend and	financial contexts	connections
formalise their	Make and use	between different
knowledge of ratio	connections	parts of
and proportion,	between different	mathematics to
including	parts of	solve problems
trigonometric	mathematics to	• Model situations
ratios, in working	solve problems	mathematically and
with measures and	Model situations	express the results
geometry, and in	mathematically	using a range of
working with	and express the	formal mathematical
proportional	results using a	representations,
relations	range of formal	reflecting on how
algebraically and	mathematical	their solutions may
graphically	representations,	have been affected
Make and test	reflecting on how	by any modelling
conjectures about	their solutions may	assumptions
the generalisations	'	•Select appropriate
that underlie	by any modelling	concepts, methods
patterns and	assumptions	and techniques to
relationships; look	•Select appropriate	apply to unfamiliar
for proofs or	concepts, methods	and nonroutine
counter-examples;	and techniques to	problems; interpret
begin to use	apply to unfamiliar	their solution in the
algebra to support	and nonroutine	context of the given
and construct	problems;	problem
and constituct	1'	problem
	interpret their	

arguments (and	solution in the		
proofs)	context of the		
	given problem		
structure of a			
numerical problem			
requires additive,			
multiplicative or			
proportional			
reasoning			
• Develop their			
mathematical			
knowledge, in part			
through solving			
problems and			
evaluating the			
outcomes,			
including			
multi-step			
problems			
Develop their use			
of formal			
mathematical			
knowledge to			
interpret and solve			
problems, including			
in financial			
contexts			
Make and use			
connections			
between different			
parts of			
mathematics to			
solve problems			

	 Model situations mathematically and express the results using a range of formal mathematical representations, reflecting on how their solutions may have been affected by any modelling assumptions Select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems; interpret their solution in the context of the given problem 				
Topic	1. Bounds & Error Intervals 2. Iteration 3. Algebraic Fractions 4. Proof	8. Simultaneous Equations 9. Solving Quadratic Equations 10. Circles Theorems	11. Compound Measures 12. Constructions & Loci 13. Bearings 14. Transformations 15. Vectors	18. Probability 19. Representing Data	

	5. Product Rule for Counting 6. Direct/Inverse Proportion 7. Functions		16. Sine/Cosine Rule 17. 3D Pythagoras & Trigonometry		
Assessment	Summative	Summative	Summative	Summative	
	Assessment	Assessment	Assessment	Assessment	
	-Mock Exams in	-Mock Exams in	-Mock Exams in	-Mock Exams in	
	Weeks 10 & 11	Weeks 10 & 11	Weeks 22 & 23	Weeks 22 & 23	
	Informal Formative	Informal	Informal Formative	Informal Formative	
	Assessment	Formative	Assessment	Assessment	
	-Use of	Assessment	-Use of whiteboards	-Use of whiteboards	
	whiteboards during	-Use of	during lessons	during lessons	
	lessons	whiteboards	-Targeted	-Targeted	
	-Targeted	during lessons	questioning (no	questioning (no	
	questioning (no	-Targeted	hands up)	hands up)	
	hands up)	questioning (no	-Live marking and	-Live marking and	
	-Live marking and	hands up)	feedback	feedback	
	feedback	-Live marking and	-Homework Tasks	-Homework Tasks	
	-Exit Tickets	feedback	-Exit Tickets	-Exit Tickets	
		-Homework Tasks			
		-Exit Tickets			

Year 11	Ter	Term 1		m 2	Te	erm 3
Higher A	HT1	HT2	HT3	HT4	HT5	HT6
Key	Order positive and	Use linear and	Change freely	Recognise, sketch		
knowledge	negative integers,	quadratic graphs	between related	and produce graphs		
(NC	decimals and	to estimate values	standard units [for	of linear and		
driven)	fractions; use the	of y for given	example time,	quadratic functions,		
	number line as a	values of x and	length, area,	simple cubic		
	model for ordering	vice versa and to	volume/capacity,	functions, the		
	of the real	find approximate	mass]	reciprocal function		
	numbers; use the	solutions of	Use compound units	y=1/x with x≠0, {the		
	symbols =, \neq , , \leq , \geq	simultaneous	such as speed, unit	exponential function		
	Use the four	linear equations	pricing and density	y=kx for positive		
	operations,	Identify and	to solve problems	values of k, and the		
	including formal	interpret roots,	Convert between	trigonometric		
	written methods,	intercepts and	related compound	functions (with		
	applied to integers,	turning points of	units (speed, rates of	arguments in		
	decimals, proper	quadratic	pay, prices, density,	degrees) y=sinx,		
	and improper	functions	pressure) in	y=cosx and y=tanx		
	fractions, and	graphically;	numerical and	for angles of any		
	mixed numbers, all	deduce roots	algebraic contexts	size)		
	both positive and	algebraically {and	Draw and measure	{Sketch translations		
	negative	turning points by	line segments and	and reflections of		
	Round numbers	completing the	angles in geometric	the graph of a given		
	and measures to an	square}	figures, including	function}		
	appropriate degree	•{Recognise and use	interpreting scale	•{Calculate or		
	of accuracy [for	the equation of a	drawings	estimate gradients of		
	example, to a	circle with centre	Derive and use the	graphs and areas		
	number of decimal	at the origin; find	standard ruler and	under graphs		
	places or significant	the equation of a	compass	(including quadratic		
	figures]	tangent to a circle	constructions	and other non-linear		
	Use approximation	at a given point}	(perpendicular	graphs), and		
	through rounding		bisector of a line	interpret results in		

	1	1	1
to estimate	Solve quadratic	segment,	cases such as
answers and	equations	constructing a	distance-time
calculate possible	{including those	perpendicular to a	graphs, velocity-time
resulting errors	that require	given line from/at a	graphs and graphs in
expressed using	rearrangement}	given point,	financial contexts}
inequality notation	algebraically by	bisecting a given	Develop their
a <x≤b< td=""><td>factorising, {by</td><td>angle); recognise</td><td>mathematical</td></x≤b<>	factorising, {by	angle); recognise	mathematical
Apply systematic	completing the	and use the	knowledge, in part
listing strategies	square and by	perpendicular	through solving
{including use of	using the quadratic	distance from a	problems and
the product rule for	formula}; find	point to a line as the	evaluating the
counting}	approximate	shortest distance to	outcomes, including
 Apply and interpret 	solutions using a	the line	multi-step problems
limits of accuracy	graph	Identify properties	Develop their use of
when rounding or	Solve two	of, and describe the	formal mathematical
truncating,	simultaneous	results of,	knowledge to
{including upper	egations in two	translations,	interpret and solve
and lower bounds}	variables	rotations and	problems, including
Use and interpret	(linear/linear {or	reflections applied	in financial contexts
algebraic notation,	linear/quadratic})	to given figures	Make and use
including: ab in	algebraically; find	Understand and use	connections
place of a × b, 3y in	approximate	the relationship	between different
place of y + y + y	solutions using a	between parallel	parts of
and 3 × y, a2 in	graph	lines and alternate	mathematics to
place of a × a, a3 in	Translate simple	and corresponding	solve problems
place of a \times a \times a,	situations or	angles	Model situations
a2 b in place of a ×	procedures into	Apply angle facts,	mathematically and
a × b, a/b in place	algebraic	triangle congruence,	express the results
of a ÷ b,	expressions or	similarity and	using a range of
coefficients written	formulae; derive	properties of	formal mathematical
as fractions rather	an equation (or	quadrilaterals to	representations,
than as decimals,	two simultaneous	derive results about	reflecting on how
brackets	equations), solve	angles and sides,	their solutions may

T T			, , , , , , , , , , , , , , , , , , , 	-	
Simplify and	the equation(s)	including	have been affected		
manipulate	and interpret the	Pythagoras'	by any modelling		
algebraic	solution	Theorem, and use	assumptions		
1 · · · · · · · · · · · · · · · · · · ·	Identify and apply	l	Select appropriate		
maintain	circle definitions	obtain simple proofs	concepts, methods		
equivalence by:	and properties,	Use Pythagoras'	and techniques to		
-Collecting like	including: centre,	Theorem and	apply to unfamiliar		
terms	radius, chord,	trigonometric ratios	and nonroutine		
-Multiplying a	diameter,	in similar triangles to	problems; interpret		
single term over a	circumference,	solve problems	their solution in the		
bracket	tangent, arc, sector	involving	context of the given		
-Taking out	and segment	right-angled	problem		
common factors	•{Apply and prove	triangles			
-Expanding	standard circle	●Interpret			
products of two or	theorems	mathematical			
more binomials	concerning angles,	relationships both			
Use algebraic	radii, tangents and	algebraically and			
methods to solve	chords, and use	geometrically			
linear equations in	them to prove	Interpret and use			
one variable	related results}	fractional {and			
(including all forms	Consolidate their	negative} scale			
that require	algebraic capability	factors for			
rearrangement)	from key stage 3,	enlargement			
Simplify and	to include	•{Describe the			
manipulate	quadratic	changes and			
algebraic	equations,	invariance achieved			
expressions	simultaneous	by combinations of			
(including those	equations and	rotations, reflections			
involving surds	inequalities	and translations}			
{and algebraic	Move freely	Interpret and use			
fractions}) by:	between different	bearings			
- factorising	numerical,	Apply Pythagoras'			
quadratic	algebraic, graphical	Theorem and			

	1	1	1	1	<u> </u>
expressions of the	and diagrammatic	trigonometric ratios			
form $x2 + bx + c$,	representations,	to find angles and			
including the	including of linear,	lengths in			
difference of two	quadratic,	right-angled	I		
squares;	reciprocal,	triangles {and where			
{factorising	(exponential and	possible, general			
quadratic	trigonometric)	triangles} in two			
expressions of the	functions	{and three}			
form ax2 + bx + c}	Make and test	dimensional figures			
- simplifying	conjectures about	•{Know and apply the			
expressions	the generalisations	sine rule, a/sinA =			
involving sums,	that underlie	b/sinB = c/sinC and			
products and	patterns and	cosine rule, a2 = b2 +	ı		
powers, including	relationships; look	c2 - 2bc cosA, to find	ı		
the laws of indices	for proofs or	unknown lengths			
•Know the	counter-examples;	and angles}			
difference between	' '	•{Know and apply			
an equation and an	algebra to support	Area = 1/2ab sinC to			
identity; argue	and construct	calculate the area,			
mathematically to	arguments (and	sides or angles of			
show algebraic	proofs)	any triangle}			
_	•Reason	• Describe translations	۱		
equivalent, and use	deductively in	as 2D vectors	I		
algebra to support	· · · · · · · · · · · · · · · · · · ·	•Apply addition and			
and construct	and algebra,	subtraction of			
arguments {and	including using	vectors,			
proofs}	geometrical	multiplication of			
•Where appropriate,	constructions	vectors by a scalar,	I		
1	Develop their	and diagrammatic	۱		
expressions as	mathematical	and column	l		
functions with	knowledge, in part	representations of	I		
inputs and outputs;	through solving	vectors; {use vectors	١		
1 '	problems and		I		
{interpret the	problems and	to construct			

	and a the a		_	1	
reverse process as	evaluating the	geometric			
the 'inverse	outcomes,	arguments and			
function'; interpret	including	proofs}			
the succession of	multi-step	Extend and formalise	l		
two functions as a	problems	their knowledge of			
'composite	Develop their use	ratio and proportion,			
function'}	of formal	including			
{Find approximate	mathematical	trigonometric ratios,			
solutions to	knowledge to	in working with			
equations	interpret and solve	measures and			
numerically using	problems,	geometry, and in	I		
iteration}	including in	working with	l		
Solve problems	financial contexts	proportional	ı		
involving direct and	Make and use	Make and test	l		
inverse proportion,	connections	conjectures about			
including graphical	between different	the generalisations			
and algebraic	parts of	that underlie			
representations	mathematics to	patterns and	l		
 Understand that X 	solve problems	relationships; look			
is inversely	Model situations	for proofs or	l		
proportional to X is	mathematically	counter-examples;			
equivalent to X is	and express the	begin to use algebra	l		
proportional to 1/Y;	results using a	to support and	ı		
{construct and}	range of formal	construct arguments			
interpret equations	mathematical	(and proofs)			
that describe direct		Develop their			
and inverse	reflecting on how	mathematical			
proportion	their solutions may	knowledge, in part	l		
Move freely	have been affected	through solving			
between different	by any modelling	problems and	١		
numerical,	assumptions	evaluating the			
algebraic, graphical	•Select appropriate	outcomes, including	١		
and diagrammatic	concepts, methods	multi-step problems			
and diagrammatic	concepts, methods	muni-steh hioniems			

representat	ons, and techniques to	• Develop their use of		
including of		formal mathematical		
quadratic,	and nonroutine	knowledge to		
reciprocal,	problems;	interpret and solve		
(exponentia	1 .	problems, including		
trigonomet	-	in financial contexts		
functions	context of the	Make and use		
•Extend and	given problem	connections		
formalise th		between different		
knowledge		parts of		
and proport		mathematics to		
including	,	solve problems		
trigonomet	ic	Model situations		
ratios, in wo		mathematically and		
with measu	_	express the results		
geometry, a	nd in	using a range of		
working wit		formal mathematical		
proportiona		representations,		
relations		reflecting on how		
algebraically	and and	their solutions may		
graphically		have been affected		
Make and to	est	by any modelling		
conjectures	about	assumptions		
the general	sations	Select appropriate		
that underli	e	concepts, methods		
patterns and	d l	and techniques to		
relationship	s; look	apply to unfamiliar		
for proofs o	r	and nonroutine		
counter-exa	mples;	problems; interpret		
begin to use		their solution in the		
algebra to s	upport	context of the given		
and constru	ct	problem		

	1		
arguments (and			
proofs)			
●Interpret when the			
structure of a			
numerical problem			
requires additive,			
multiplicative or			
proportional			
reasoning			
Develop their			
mathematical			
knowledge, in part			
through solving			
problems and			
evaluating the			
outcomes,			
including			
multi-step			
problems			
Develop their use			
of formal			
mathematical			
knowledge to			
interpret and solve			
problems, including			
in financial			
contexts			
Make and use			
connections			
between different			
parts of			
mathematics to			
solve problems		 	

	● Model situations mathematically and express the results using a range of formal mathematical representations, reflecting on how their solutions may have been affected by any modelling assumptions ● Select appropriate concepts, methods and techniques to apply to unfamiliar and nonroutine problems; interpret their solution in the context of the given problem				
Topic	1. Bounds & Error Intervals 2. Iteration 3. Algebraic Fractions 4. Proof	8. Completing the Square & the Quadratic Formula 9. Quadratic Simultaneous Equations	12. Compound Measures 13. Constructions & Loci 14. Bearings 15. Transformations 16. Vectors	19. Graph Transformations 20. Gradient & Area Under a Curve	

	5. Product Rule for Counting 6. Direct/Inverse Proportion 7. Functions	10. Equation of a Circle 11. Circle Theorems	17. Sine/Cosine Rule 18. 3D Pythagoras & Trigonometry		
Assessment	Summative Assessment -Mock Exams in Weeks 10 & 11 Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Exit Tickets	Summative Assessment -Mock Exams in Weeks 10 & 11 Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks	Summative Assessment -Mock Exams in Weeks 22 & 23 Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks -Exit Tickets	Summative Assessment -Mock Exams in Weeks 22 & 23 Informal Formative Assessment -Use of whiteboards during lessons -Targeted questioning (no hands up) -Live marking and feedback -Homework Tasks -Exit Tickets	