



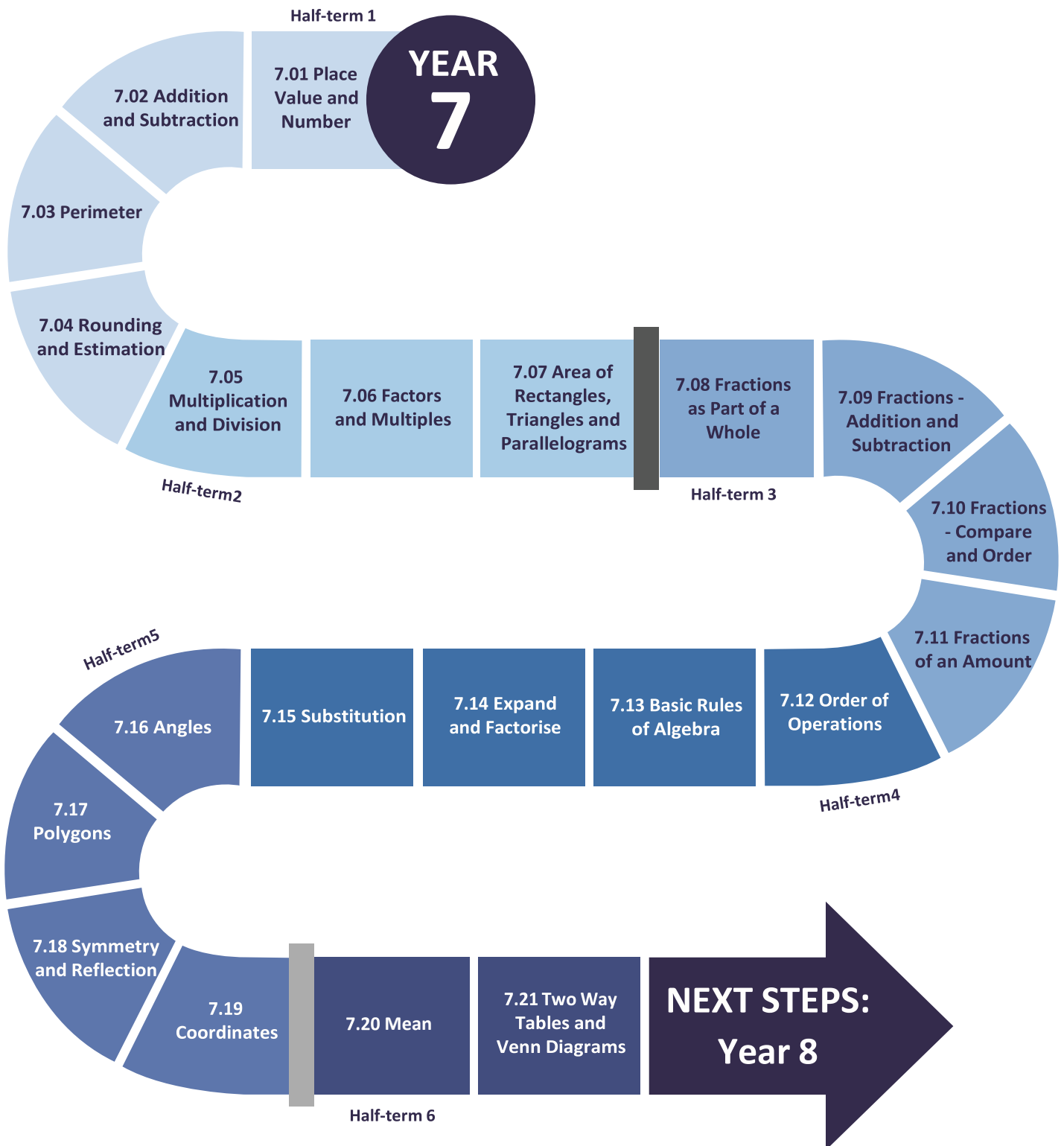
United Learning
The best in everyone™

MATHEMATICS

YEAR	TERM	KPI	PRIOR KNOWLEDGE
7	1	7.01 Place Value and Number Sense	KS2 Y6 PoS
		7.02 Addition and Subtraction	KS2 Y6 PoS
		7.03 Perimeter	KS2 Y6 PoS, 7.02
		7.04 Rounding and Estimation (in Real Life Situations)	Whole Numbers: KS2 Y6 PoS
	2	7.05 Multiplication and Division	KS2 Y6 PoS
		7.06 Factors and Multiples	KS2 Y6 PoS
		7.07 Area of Rectangles, Triangles and Parallelograms	KS2 Y6 PoS (not Compound Shapes, 7.05)
	Mid-Year Assessment		
	3	7.08 Fractions as Part of a Whole	KS2 Y6 PoS
		7.09 Fractions - Addition and Subtraction	KS2 Y6 PoS
		7.10 Fractions - Compare and Order	KS2 Y6 PoS
	4	7.11 Fraction of an Amount	7.05
		7.12 Order of Operations	BIDMAS with 4 Operations: KS2 Y6 PoS
		7.13 Basic Rules of Algebra	KS2 Y6 PoS, 7.03, 7.09
		7.14 Expand and Factorise	KS2 Y6 PoS (Neg. Numbers), 7.02, 7.05, 7.13
	5	7.15 Substitution	KS2 Y6 PoS (Neg. Numbers), 7.05, 7.13
		7.16 Angles	KS2 Y6 PoS, 7.02
		7.17 Polygons	KS2 Y6 PoS
		7.18 Symmetry and Reflection	KS2 Y5 PoS
	6	7.19 Coordinates	KS2 Y6 PoS
		End of Year Assessment	
	6	7.20 Mean	KS2 Y6 PoS, 7.02, 7.05
		7.21 Two Way Tables and Venn Diagrams	7.02
8	1	8.01 Indices	7.01
		8.02 Primes	7.06
		8.03 Rounding	7.04
		8.04 Fractions	7.08, 7.09
		8.05 Negative Number Review	7.14
	2	8.06 Linear Equations	7.13
		8.07 Linear Equations in Context	7.03, 7.07, 7.13, 8.06
		8.08 Coordinates and Basic Graphs	7.19
	Mid-Year Assessment		
	3	8.09 Units of Measurement	7.05
		8.10 Angles in Parallel Lines	7.16
		8.11 Interior and Exterior Angles	7.05, 7.16, 7.17
	4	8.12 Circumference	7.03, 8.09
		8.13 Proportional Reasoning	7.05
		8.14 Fractions, Decimals and Percentages	7.08, 7.10, 8.04
	5	8.15 Ratio	KS2 Y6 PoS, 7.05, 8.13
		8.16 Area of Circles and Trapezia	7.07, 8.09
		8.17 Presenting and Interpreting Data	7.16
	6	8.18 Averages	7.20
		End of Year Assessment	
	6	8.19 3-D Visualisation	KS2 Y6 PoS
		8.20 Volume	KS2 Y6 PoS, 7.05
9	1	9.01 Place Value and Number Properties	7.10, 8.05
		9.02 Decimals	7.02, 7.05, 7.12
		9.03 Rounding and Estimation	8.03
		9.04 Indices, Powers and Roots	8.01, 8.05
		9.05 Factors, Multiples and Primes	8.02
		9.06 Ratio	8.15
	2	9.07 Fractions, Decimals and Percentages	7.10, 8.04, 9.01
		9.08 Fractions	8.04
		9.09 Percentages	8.14
		9.10 Proportion	7.15, 8.06, 8.09, 8.13
	Mid-Year Assessment		
	3	9.11 Notation	7.13
		9.12 Simplifying and Index Laws	8.06, 9.04, 9.08
		9.13 Expanding and Factorising	8.06
	4	9.14 Expressions and Substitution	7.15, 8.01
		9.15 Linear Equations	7.15, 8.06, 8.07, 9.08
		9.16 Linear Inequalities	9.01, 9.15
		9.17 Perimeter and Area	7.03, 7.07, 7.16, 8.09, 8.10, 8.12, 9.15
	5	9.18 Pythagoras	7.19, 8.01, 8.03, 9.14
		9.19 Properties of Shapes	7.17, 7.18, 7.19
		9.20 Angle Facts	7.16, 8.10, 8.11
		9.21 Parallel Lines	8.10
		9.22 Circles	8.12, 8.16
		9.23 Volume	8.20, 8.21
	End of Year Assessment		
	6	9.24 Surface Area	8.20
		9.25 Sequences	9.14
		9.26 Basic Vectors	7.02, 8.05
		9.27 Plans and Elevations	8.20

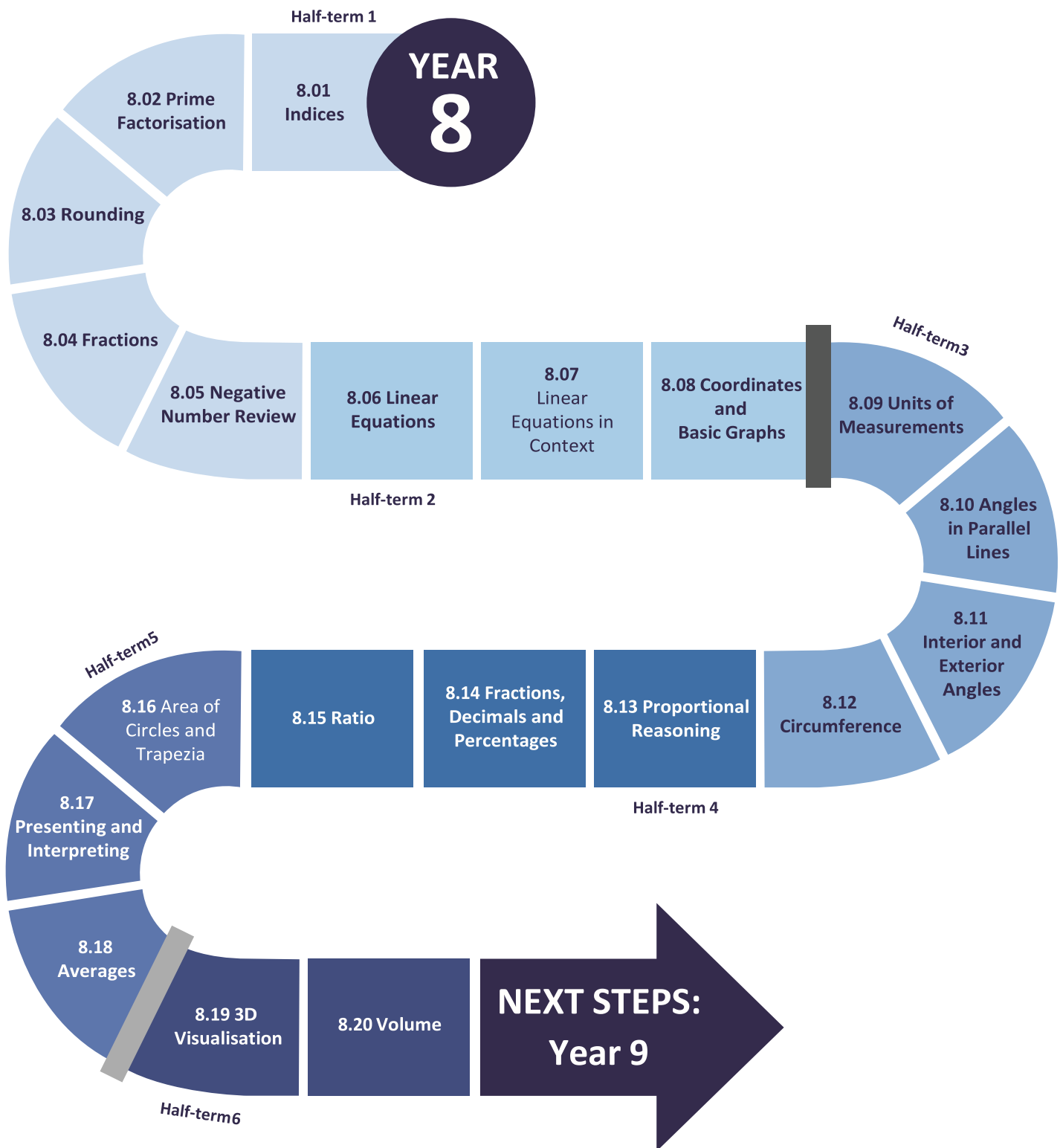
Mid-Year Assessment

End of Year Assessment



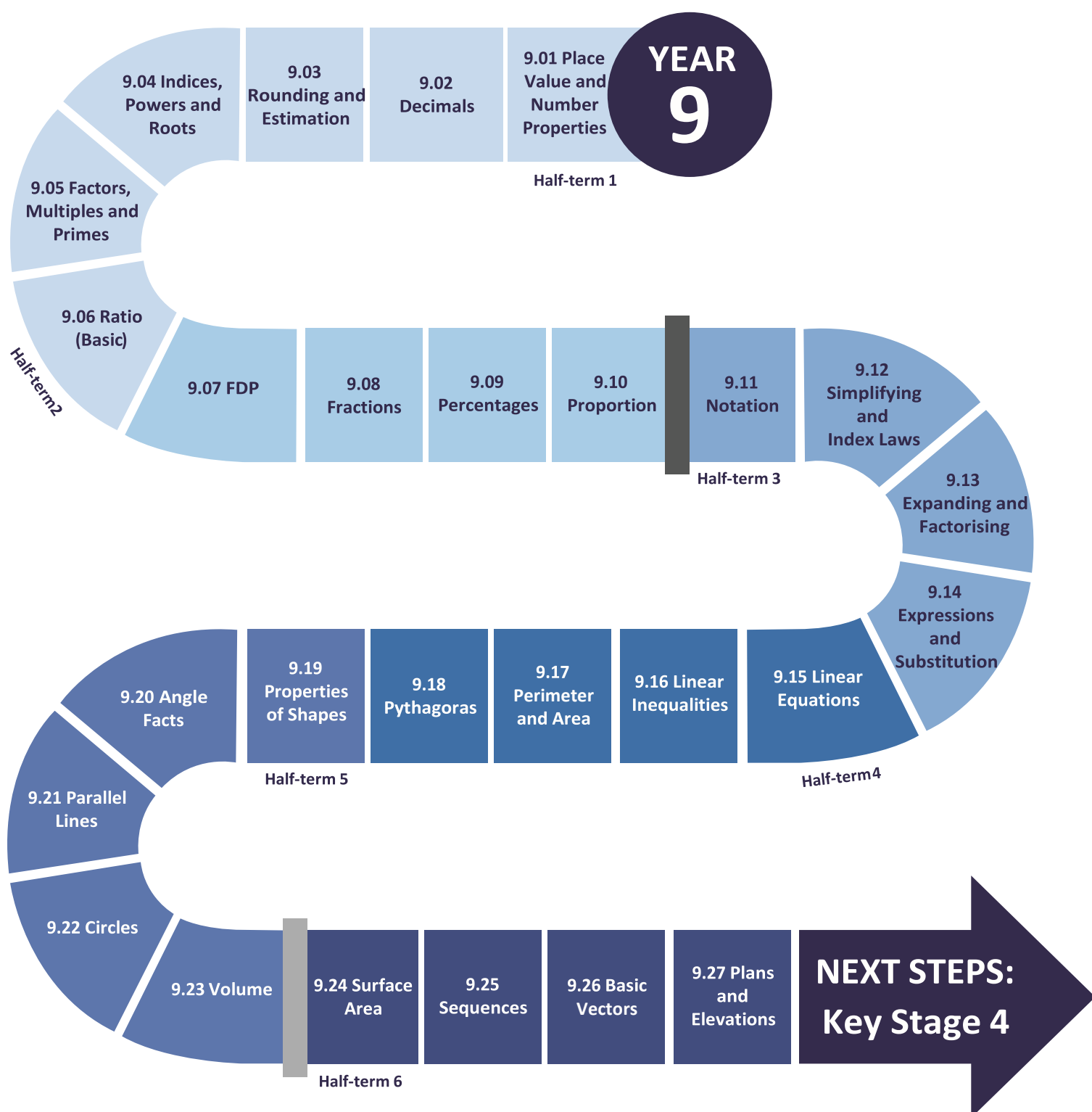
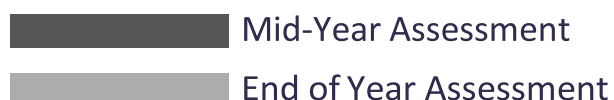
Mid-Year Assessment

End of Year Assessment



Year 9

KEY:



‘Why This, Why Now?’

In our planning, we have asked ourselves 'why this, why now?' Here we provide some examples of the curriculum choices we have made, and why the units have been placed in the order we have chosen:

- Perimeter and angles are taught following addition and subtraction so that pupils have the skill set needed to access the numeracy demands of these topics.
- Area and substitution are taught following multiplication and division so that pupils have the skill set needed to access the numeracy demands of these topics.
- Algebraic manipulation is taught in-depth in Year 7 to support solving equations in Year 8.
- Fraction and decimal manipulation are taught early in Year 7 and are then continually interleaved into future topics such as order of operations, linear equations, and circumference.
- Solving linear equations is taught in-depth in Year 8 and then it is continually interleaved into future topics such as angles in parallel lines.
- The Mean is taught in-depth in Year 7 before the introduction of the Median, Mode and Range in Year 8. This is to avoid misconceptions in the analysis of averages.
- Perimeter and area are taught separately with a suitable time gap to avoid misconceptions with these two mathematical areas.

Teaching the Maths Curriculum

The maths curriculum promotes a consistent approach to lesson delivery by linking lesson structure to the Rosenshine Principles of Instruction, in line with United Learning’s centralised teaching and learning approach. We use these principles because cognitive research (e.g. [Kirschner, Sweller and Clark, 2006](#)) suggests that students need a large amount of subject knowledge in their long-term memory to become competent in any subject. In maths, pupils will be far better equipped to apply mathematical thinking to a problem if their working memory is not overloaded with basic calculations. Therefore, our curriculum always emphasises secure content knowledge before moving onto problem-solving tasks. This is a step away from discovery-based learning and acknowledges the gap between teachers as experts and pupils as novices, with the key point being that we can not expect pupils to show mathematical expertise until they have acquired fluency with numbers.

The development of long-term memory is supported by a curriculum that focuses on interleaving content, regular low stakes quizzing, daily starter grids that review prior learning, and formative assessments that feed into teacher planning to close gaps in knowledge. Consistent review of key content is integral to the structure and order of the curriculum itself. Teachers use Sparx to review this content as homework.

Our curriculum is designed to provide a challenge for all learners. Teachers are expected to adapt resources for the needs of their students. We use carefully constructed resources that exemplify accessible methods for students and teachers. We provide an opportunity for challenge by depth rather than accelerating through the curriculum. In Key Stage 4, exam questions focusing on the specification objectives AO1/2/3 are used, when appropriate, to assess understanding of core fluency and application of it in context.

So, when we walk into a maths lesson, what should we expect to see?

All teachers have the autonomy to combine or separate the United Learning resources to fit their pupils’ needs. However, we do expect all lessons to follow a similar pattern. This pattern links directly to the Rosenshine Principles.

Rosenshine Principles

- R1 - Begin with a short review of prior learning*
- R2 - Present new material in small amounts or steps*
- R3 - Ask many questions and check the responses of all students*
- R4 - Provide models*
- R5 - Guide student practice*
- R6 - Check for student understanding*
- R7 - Obtain a high success rate*
- R8 - Provide scaffolds for difficult tasks*
- R9 - Require and monitor independent practice*
- R10 - Engage students in weekly and monthly review*

‘Do now’ activity: R1

- Mixed fluency skills based on pre-requisite knowledge presented in a structured starter grid
- Self-assessed answers should be pre-prepared to increase the pace and ease the transition to the next part of the lesson
- Poorly answered questions should appear in the next starter

Introduction of new skills: R2 – R5, R8

- Carefully chosen examples that are modelled in detail without whole class questioning
- Students complete a similar example to the modelled example
- Then ask targeted questions to check understanding

Check for understanding – AFL – R6, R3

- Check the understanding of examples – this could be in books, on MWB, with questioning and/or purposeful circulation
- Re-model questions that were not understood

Independent practice – R7

- Independent practice informed by AFL i.e. mini quiz, targeted questions
- Independent practice that relates directly to the modelled examples
- Enough time is given for students to complete questions with minimal copying out
- Problem-solving questions will follow when the fluency is secure

Review of independent practice – R9

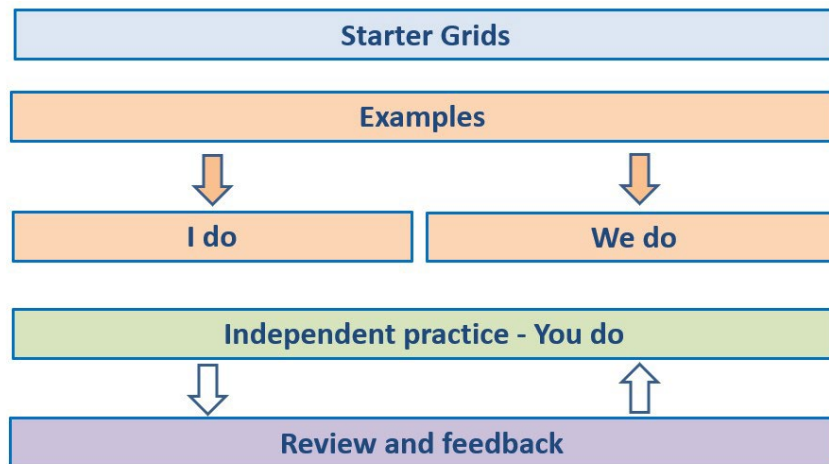
- Answers given to independent practice (prepare answers and minimise pupil input to increase the pace and maximise the clarity of answers)
- Students self-assess their work (coloured pen)

Regular review – R10

- Use starters and regular quizzing to review knowledge taught

The United Learning resources have been written to support Rosenshine principles in the classroom. The focus of these resources is the **I/we/you model**: Explanation/modelling >> guided practice >> independent practice.

The [flow chart](#) below summarises a typical structure that we should expect to see in maths lessons



In Year 11 and Sixth Form maths lessons we expect to see exam questions featuring in most lessons. Where exam questions are used there should be a clear reference to the number of marks available, how they are attained, and where it is likely to feature on an exam.

Homework

All pupils complete homework online on Sparx. The platform support the Key Stage 3 and Key Stage 4 curriculum, and all United Learning resources signpost pupils to the relevant maths clips on the website. For example, in summative assessment question level analysis sheets (QLAs), in Diagnostic tests and the scheme of work to support independent work and teaching of prior knowledge.

On Sparx, teachers input the United Learning maths curriculum into the system at the start of the year breaking down what is being learnt on a week-by-week basis, directly linking our curriculum to the homework platform.

Assessing the Maths Curriculum

Formative Assessment in Maths

Formative assessment can identify what pupils can and cannot do and is a way to review prior knowledge. The following resources support formative assessment in maths:

- **Starter grids** – daily quiz at the beginning of every lesson covering prior knowledge.
- **Fluency tests** – that can be used as weekly/fortnightly recap quizzes.
- **KPI tests** – to identify class gaps in a recently taught unit. Whole class marking identifies themes in pupils' responses which can inform reteaching and starter grid content.

Summative Assessment in Maths

Summative assessments are provided for the end of each half term of teaching. Most schools use the mid-year assessment, and all schools are expected to sit the end of year assessment.

Summative assessments are followed by an in-class review of key gaps in learning. Each pupil is provided with colour coded, personalised, question-level analysis sheets directing them to independent learning tasks on Sparx.

5 Recovery and Catch-up in Maths

Summative assessment will help to identify pupils who have fallen behind and need to catch up. QLAs post-assessment provides pupils with targeted support directing them to independent learning tasks on Sparx.

Gaps identified through summative and formative assessments can be addressed in starter grids and designated catch-up lessons.

Progression in the Maths Curriculum

Primary to Secondary:

The Year 7 curriculum builds on and develops the Key Stage 2 curriculum. The curriculum ensures that topics are revisited in depth to support the transition from Year 6. For example, numeracy and geometry and revisited in the first term, covering basic and extended content. This ensures that pupils have an opportunity to quickly catch up if there are any gaps in their Key Stage 2 knowledge. A baseline assessment at the start of Year 7 helps to identify what students can and cannot do. The Year 7 curriculum is also mapped to prior learning in Key Stage 2 so that teachers know which material pupils have been exposed to.

Key Stage 3 to Key Stage 4:

The Key Stage 3 curriculum covers key mathematical building blocks in depth that will support a successful start to the Key Stage 4 GCSE curriculum. In the Key Stage 4 curriculum, there are many opportunities to revisit prior knowledge through formative assessment resources such as starter grids and fluency tests.

