TOPIC OVERVIEW DOCUMENT

YEAR 11

TOPIC OVERVIEW:
Students develop a broad and connected understanding of number, algebra, geometry and probability. In number, they learn to work confidently with standard form, converting between notation, comparing very large and very small numbers, and performing calculations using powers of ten. In algebra, they extend their understanding of functions, graphs, equations and formulae, using function notation, composite and inverse functions, and interpreting graphical relationships to model and solve problems. In geometry and measure, students deepen their reasoning through work with circles, vectors, angles, bearings, trigonometry, constructions, loci and transformations. They apply circle theorems, calculate measures involving circles, use vectors to solve geometric problems, and develop accuracy in construction and proof. They also explore enlargement, similarity, rotations and translations, strengthening their understanding of proportional and spatial reasoning.
Within ratio and proportion, students interpret and calculate rates such as speed, density and unit pricing, while in probability they use sets and Venn diagrams to organise information, analyse relationships and solve problems. Across all topics, students build logical reasoning, problem-solving skills and mathematical fluency, preparing them for more advanced mathematical study and examination success.

Key Vocabulary (T2)	Key Vocabulary (T3)	Core knowledge	Disciplinary Skills
	Linear Sequence Radius. Diameter Vector. Ratio Area. Volume. Similarity Congruence Angle. Bearing. Hypotenuse. Loci. Enlargement	Across these topics, students develop core knowledge of number, algebra, geometry, measure and probability. They gain a secure understanding of standard form, indices and powers of ten, enabling them to work confidently with very large and very small numbers. In algebra, they build knowledge of functions, equations, formulae and graphs, understanding how mathematical relationships can be represented and interpreted in different ways. Their proportional reasoning is strengthened through work with rates, similarity, enlargement and trigonometry,	To be successful in these topics, you need to think mathematically, reason logically and communicate your ideas clearly. You will develop the ability to select efficient methods, work accurately with large and small numbers, manipulate algebraic expressions, and represent mathematical relationships using graphs, equations and functions. You will learn to interpret information, identify patterns, justify conclusions and apply mathematical concepts to unfamiliar problems. You will strengthen your geometric reasoning by visualising shapes, using precise mathematical language, applying circle theorems, vector methods, constructions and transformations, and making logical deductions from given information. You will also develop spatial

		while their geometric knowledge expands to include circles, vectors, angles, bearings, constructions, loci and transformations. Students also develop an understanding of sets, Venn diagrams and set notation, using these to organise information and solve probability problems. Throughout the course, they learn key mathematical definitions, formulae, theorems and conventions, enabling them to reason logically, communicate mathematical ideas accurately and solve increasingly complex problems.	awareness through bearings, trigonometry and similarity, using diagrams and mathematical models to solve problems. Across probability, sets, ratio and rates, you will organise information systematically, analyse relationships between quantities, use proportional reasoning, and interpret data in different forms. Success requires resilience, attention to detail, accuracy in calculations, and the ability to explain and justify your reasoning. These disciplinary skills help you become a confident mathematical problem solver who can connect ideas, evaluate solutions and apply mathematics effectively in a wide range of contexts.

Checkpoint: Vocab/ Knowledge/ Disciplinary skill(s)	**What does this assessment look like?**	**Which disciplinary skills do I need to be successful?**
Checkpoint 1: Standard form	You will complete a skills check You will be reassessed during the Mastery lesson	To be successful in **standard form**, you need to work accurately with place value and powers of ten, convert confidently between ordinary numbers and standard form, and perform calculations efficiently. You should be able to compare, order and estimate numbers, interpret mathematical notation correctly, and communicate your working clearly. Success also requires attention to detail, logical thinking, problem-solving skills and the ability to check that answers are reasonable.
Checkpoint 2: Circles Vectors	You will complete a skills check You will be reassessed during the Mastery lesson	To be successful in circles and vectors, you need strong geometric reasoning, accuracy and attention to detail. You should be able to apply key mathematical facts and methods, perform calculations confidently, and use logical thinking to solve problems. Success also requires spatial awareness, clear mathematical communication, and the ability to justify your reasoning and conclusions when solving geometric and proof-based questions.

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Checkpoint 3: Probability	You will complete a skills check You will be reassessed during the Mastery lesson	To be successful in probability, you need to think logically, interpret information carefully and apply probability rules accurately. You should be able to organise information using sets and Venn diagrams, calculate probabilities, and explain relationships between events. Success requires attention to detail, systematic problem-solving, and the ability to justify your reasoning using appropriate mathematical language and notation.
Checkpoint 4: Algebra	You will complete a skills check You will be reassessed during the Mastery lesson	To be successful in algebra, you need to think logically, recognise patterns and apply mathematical rules accurately. You should be able to work confidently with functions, equations, formulae and graphs, using algebraic methods to solve problems and represent relationships between variables. Success requires attention to detail, fluency in mathematical notation, and the ability to reason, justify your methods and interpret solutions in different contexts.
Checkpoint 5: Ratio and proportion	You will complete a skills check You will be reassessed during the Mastery lesson	To be successful in ratio and proportion, you need to understand multiplicative relationships and recognise how quantities change in relation to one another. You should be able to compare quantities, simplify and use ratios, work confidently with proportions, and apply these skills to real-life contexts such as rates, scale factors, speed, density and unit pricing. Success requires strong numerical fluency, logical reasoning, accurate calculations and the ability to interpret and communicate mathematical relationships clearly. You should also be able to choose appropriate methods, check the reasonableness of answers and apply proportional reasoning to solve unfamiliar problems.
Checkpoint 6: Geometry and measure	You will complete a skills check You will be reassessed during the Mastery lesson	To be successful in geometry and measure, you need strong spatial reasoning, accuracy and logical thinking. You should be able to apply geometric facts and properties, use constructions and trigonometry accurately, interpret bearings and transformations, and solve problems involving shape, space and measure. Success requires careful use of mathematical tools and notation, attention to detail, and the ability to justify your reasoning clearly when solving geometric problems and proving relationships.

Milestone assessment:

The average of the following skills checks :

Standard Form; Circles and Vectors; Probability; Algebra; Ratio and proportion; Geometry and measure

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Vocab quiz:	**Knowledge tasks:**	**Disciplinary tasks:**
Linear Sequence Radius. Diameter Vector. Ratio Area. Volume. Similarity Congruence Angle. Bearing. Hypotenuse. Loci. Enlargement	Students develop a secure understanding of key concepts across number, algebra, geometry, measure and probability. They learn to work confidently with standard form and indices, solve equations, interpret graphs and understand functions. Their proportional reasoning is strengthened through topics such as rates, similarity, enlargement and trigonometry, while their geometric understanding develops through work with circles, vectors, angles, bearings, constructions, loci and transformations. Students also learn how to organise and analyse information using sets and Venn diagrams. Throughout these topics, they build logical reasoning, problem-solving skills and mathematical fluency, enabling them to communicate their ideas clearly and tackle increasingly complex mathematical challenges.	Students continue to develop the mathematical thinking skills needed for GCSE success. They learn to reason logically, communicate their ideas clearly and select efficient methods to solve problems. Through topics in number, algebra, geometry, ratio and probability, they strengthen their ability to work accurately, identify patterns, interpret information and apply mathematical concepts in unfamiliar situations. They also develop spatial reasoning through work with circles, vectors, trigonometry and transformations, while building confidence in using diagrams, graphs and mathematical models. Across all topics, students learn to justify their thinking, evaluate solutions and become resilient, independent problem-solvers who can apply mathematics effectively in a wide range of contexts.

How can I **achieve** in this topic?

- Complete tasks on SPARX
- Engage 100% in lessons
- Make good notes/examples in lessons and use them

Further research:

- Home | NRICH
- Maths Genie - Free Online GCSE and A Level Maths Revision