TOPIC OVERVIEW DOCUMENT

YEAR 10

TOPIC OVERVIEW:

These topics build on Year 10 learning by extending students' understanding of angle rules, properties of shapes, area, circles and transformations. Students apply familiar geometric facts to more complex problems involving parallel lines, polygons, bearings and symmetry, while developing their use of vectors and geometric reasoning. This strengthens their ability to make connections, solve multi-step problems and justify solutions clearly in preparation for GCSE Mathematics.

These topics prepare students for their GCSE exams by strengthening their ability to apply geometric facts and formulas to a range of familiar and unfamiliar problems. Students practise interpreting diagrams, solving multi-step questions, working accurately with angles, circles, bearings and vectors, and clearly explaining and justifying their reasoning. This develops the problem-solving, accuracy and mathematical communication needed to tackle exam questions confidently.

Key Vocabulary (T2)	Key Vocabulary (T3)	Core knowledge	Disciplinary Skills
Interpret, compare, calculate, identify, recognise, describe, explain, justify, apply, represent, construct, estimate, analyse, determine, relationship, property, accurate, direction, position, movement, pattern, structure, transformation, reasoning, solution, method, appropriate.	Perimeter Parallel Polygon Area Trapezium Angle Vector Tangent Bearings Chord	Students develop their geometric reasoning and problem-solving through work with angles, polygons, circles, symmetry, bearings and vectors. They use angle facts, including relationships on parallel lines and within polygons, to calculate missing values and justify their answers. They apply formulas to find the area of trapezia and circles and the circumference of circles, using correct units and mathematical notation. Students develop spatial awareness through symmetry, transformations and three-figure bearings, applying these skills to diagrams and real-life contexts. They also explore the properties of circles and use circle theorems to solve more complex problems. Vectors further develop algebraic and geometric reasoning by allowing students to describe movement, perform calculations and prove relationships between points and shapes.	Students develop strong numerical fluency and proportional reasoning through work with ratios, fractions, percentages, interest and non-calculator methods. They apply efficient calculation strategies, estimation and checking to solve both abstract and real-life problems accurately. In probability, students develop logical reasoning by analysing likelihood, representing probabilities, and using sample spaces and tree diagrams to solve single and combined events. Together, these topics strengthen accuracy, problem-solving, financial literacy and mathematical communication.

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Checkpoint: Vocab/ Knowledge/ Disciplinary skill(s)	What does this assessment look like?	Which disciplinary skills do I need to be successful?
Checkpoint 1: Perimeter, area and volume	You will complete a skills check You will be reassessed during the Mastery lesson	You need to calculate perimeter, area, surface area and volume accurately, select and apply the correct formulas, and identify the measurements needed from diagrams. You should work confidently with compound and composite shapes, use appropriate units, solve multi-step problems, check that your answers are reasonable, and explain and justify your methods using clear mathematical language.
Checkpoint 2: Interpret and represent data	You will complete a skills check You will be reassessed during the Mastery lesson	You need to interpret data presented in tables, charts and graphs, identify patterns and trends, and make accurate comparisons. You should choose appropriate ways to represent data, construct graphs and charts accurately, draw conclusions from the information, and explain and justify your findings using clear mathematical language.
Checkpoint 3: Non-linear graphs	You will complete a skills check You will be reassessed during the Mastery lesson	You need to interpret and recognise different types of non-linear graphs, identify key features and understand how changes in equations affect their shape and position. You should plot graphs accurately, use them to solve equations and problems, make connections between graphical and algebraic representations, and explain your reasoning using clear mathematical language.
Checkpoint 4: Angles	You will complete a skills check You will be reassessed during the Mastery lesson	You need to recognise and apply angle facts accurately, including angles on a straight line, around a point and within different shapes. You should identify missing angles from diagrams, make connections between different angle rules, solve multi-step problems, and explain and justify your answers using clear mathematical language.
Checkpoint 5: Graphs and diagrams	You will complete a skills check You will be reassessed during the Mastery lesson	You need to interpret information shown in graphs and diagrams, identify key features, patterns and relationships, and extract information accurately. You should compare data, use appropriate scales, construct graphs and diagrams clearly, solve problems using the information presented, and explain and justify your conclusions using clear mathematical language.

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Checkpoint 6: Vectors	You will complete a skills check You will be reassessed during the Mastery lesson	You need to represent vectors accurately using correct notation, understand their direction and magnitude, and perform operations such as addition, subtraction and scalar multiplication. You should use vectors to describe translations, solve geometric problems, identify relationships between points and shapes, and explain and justify your reasoning using clear mathematical language.

Milestone assessment:

The average of the following skills checks :

Perimeter, area and volume; Interpret and represent data; Non-linear graphs; Angles; Graphs and diagrams; Vectors

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Vocab quiz:	**Knowledge tasks:**	**Disciplinary tasks:**
Perimeter Parallel Polygon Area Trapezium Angle Vector Tangent Bearings Chord	Students develop their understanding of geometry through angles, polygons, circles, symmetry, bearings and vectors. They learn to apply key rules and formulas accurately, solve increasingly complex problems and explain their reasoning clearly. These topics also strengthen students' spatial awareness and introduce more advanced geometric reasoning, including circle theorems and vectors, helping to prepare them for more challenging GCSE Mathematics.	Students develop their understanding of geometry through work with angles, shapes, circles, symmetry, bearings and vectors. They learn to calculate angles, areas and distances accurately, recognise important properties of shapes, and apply their knowledge to practical problems involving direction and movement. These topics build confidence in geometric reasoning, problem-solving and explaining mathematical ideas clearly.

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 - BBC Bitesize