TOPIC OVERVIEW DOCUMENT

YEAR 9

TOPIC OVERVIEW:

In Year 9, students build on their Year 8 understanding of angles, polygons, area, symmetry and coordinates by applying these skills to more complex geometry. They extend their spatial reasoning to 3-D shapes, surface area and volume, develop greater precision through constructions and congruency, and build on coordinate work through rotations, translations and vectors. Students also progress from using known angle facts to logical deduction and geometric justification, while Pythagoras' Theorem introduces a new way to calculate missing lengths. This develops greater accuracy, reasoning and problem-solving, preparing students for GCSE geometry.

Key Vocabulary (T2)	Key Vocabulary (T3)	Core knowledge	Disciplinary Skills
Interpret, represent, identify, describe, compare, construct, calculate, apply, justify, deduce, explain, reason, transform, recognise, visualise, accurate, logical, relationship, properties, method, sequence, position, direction, scale, strategy, conclusion	Area. Volume. Locus. Bisector. Congruent HCF LCM. Percentage. Simple Interest. Compound Interest	Students develop geometric reasoning and problem-solving skills through work with 3-D shapes, constructions, congruency, transformations and Pythagoras' Theorem. They learn to calculate surface area and volume, carry out accurate constructions, justify when shapes are congruent, and use logical deduction to explain geometric results. Students also develop skills in rotation and translation, using coordinates and vectors, and apply Pythagoras' Theorem to find missing lengths. Together, these topics strengthen *spatial awareness, accuracy, logical reasoning and mathematical communication	Students develop confidence across number and geometry, strengthening both calculation skills and spatial reasoning. In number, they work accurately with integers, decimals, fractions and directed numbers, using efficient mental and written methods. Students develop their understanding of percentages by calculating increases and decreases, using percentage multipliers, solving reverse percentage problems and exploring compound change. They also work with standard form and, at Higher Tier, surds. In geometry, students develop their understanding of 3-D shapes, including nets, cross-sections, surface area and volume. They improve their accuracy in constructions by using rulers, compasses and protractors to bisect angles and construct perpendicular lines. Students also explore congruency, using geometric reasoning to identify and justify when shapes are identical in size and shape.

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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: Three dimensional shapes	You will complete a skills check You will be reassessed during the Mastery lesson	You need to recognise and describe 3-D shapes, identify faces, edges and vertices, and visualise nets and different representations. You should be able to calculate surface area and volume accurately, select appropriate formulae and units, and apply spatial reasoning to solve problems.
Checkpoint 2: Construction and congruency	You will complete a skills check You will be reassessed during the Mastery lesson	You need to use geometric tools accurately to construct shapes, bisectors and triangles, and follow geometric instructions carefully. You should be able to recognise congruent shapes, apply triangle congruence rules, and justify your conclusions using clear mathematical reasoning.
Checkpoint 3: Numbers	You will complete a skills check You will be reassessed during the Mastery lesson	*You need* **to** work confidently with different types of numbers, including integers, fractions, decimals, percentages, powers and roots**.** You should be able to calculate accurately, use estimation and rounding, recognise number relationships, select efficient methods and apply your skills to solve problems in unfamiliar contexts*.*
Checkpoint 4: Using percentages	You will complete a skills You will be reassessed during the Mastery lesson	You need to calculate percentages of amounts, percentage increases and decreases, and use percentage multipliers. You should be able to choose efficient methods, apply percentages to real-life problems, work accurately and check whether your answers are reasonable.
Checkpoint 5: Maths and money	You will complete a skills check You will be reassessed during the Mastery lesson	*You need to* calculate percentages of amounts, percentage increases and decreases, and use percentage multipliers**.** You need t**o** choose efficient methods, apply percentages to real-life problems, work accurately and check that your answers are sensible**.**

Milestone assessment:
The average of the following skills checks : Three dimensional shapes; Construction and congruency; Numbers; Using percentages; Maths and money

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Vocab quiz:	**Knowledge tasks:**	**Disciplinary tasks:**
Area. Volume. Locus. Bisector. Congruent HCF LCM. Percentage. Simple Interest. Compound Interest.	Students develop confidence in geometry and problem solving through 3-D shapes, constructions, congruency, transformations and Pythagoras' Theorem. They learn to calculate accurately, construct and transform shapes, find missing lengths and explain their reasoning clearly. These skills strengthen spatial awareness, logical thinking and accuracy, providing a strong foundation for GCSE Maths	Students develop confidence in geometry and problem solving by exploring 3-D shapes, constructions, congruency, transformations and Pythagoras' Theorem. They learn to calculate lengths, areas and volumes, construct and transform shapes accurately, and explain their mathematical reasoning. These skills develop spatial awareness, accuracy and logical thinking, providing a strong foundation for GCSE Maths.

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