TOPIC OVERVIEW DOCUMENT

YEAR 11

TOPIC OVERVIEW:

This milestone develops students' understanding of ratio, proportion and geometry. Students will use ratios and scale factors to solve real-life problems, calculate perimeter, area, surface area and volume, and apply appropriate formulae and units. Students will also explore congruence and similarity, using geometric reasoning and proportional relationships to find missing measurements and justify solutions.

You will become more confident applying formulae, using scale factors, solving multi-step problems and reasoning geometrically, helping you tackle both familiar and unfamiliar GCSE exam questions accurately.

Key Vocabulary (T2)	Key Vocabulary (T3)	Core knowledge	Disciplinary Skills
Interpret, compare, calculate, apply, justify, explain, identify, recognise, construct, represent, convert, estimate, analyse, determine, scale, relationship, proportional, equivalent, accurate, method, strategy, reasoning, solution, dimension, measurement	Ratio Area Volume Similarity Congruence.	Ratio involves comparing quantities in a given proportion, simplifying ratios, and using them to scale values up or down. Students need to divide amounts in a ratio, link ratios to fractions, and apply proportional reasoning to solve problems in real-life contexts such as recipes or maps. Perimeter, Area & Volume requires knowledge of calculating the perimeter and area of 2D shapes such as rectangles, triangles, circles, and compound shapes, as well as the surface area and volume of 3D solids including prisms, cylinders, cones, and spheres. Students must apply formulas accurately, convert units when necessary, and solve practical problems involving measurement and spatial reasoning. Congruence involves understanding the conditions under which shapes are exactly the same in size and shape, using formal reasoning such as SSS, SAS, ASA, and RHS to justify congruence in geometric problems. Similarity focuses on identifying when shapes are the same shape but different in size, using scale factors to find missing lengths, areas, or volumes while maintaining proportionality.	Students develop a strong set of mathematical skills across ratio, geometry, and measurement. They learn to compare and simplify ratios, divide quantities proportionally, and use proportional reasoning in practical contexts such as recipes, maps, and scaling problems. Their understanding of perimeter, area, and volume expands to include accurate calculation of 2D shapes and more complex 3D solids, requiring confident use of formulas, unit conversions, and spatial reasoning. In geometry, they deepen their grasp of congruence by applying formal criteria like SSS, SAS, ASA, and RHS to justify when shapes are identical, while their work on similarity strengthens their ability to recognise proportional relationships, use scale factors, and determine missing lengths, areas, and volumes when shapes share the same form but differ in size.

Checkpoint: Vocab/ Knowledge/ Disciplinary skill(s)	What does this assessment look like?	Which disciplinary skills do I need to be successful?

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Checkpoint 1: Ratio and proportion	You will complete a skills check You will be reassessed during the Mastery lesson	You need to recognise proportional relationships, simplify and use ratios, apply scale factors, find missing values, choose efficient methods, and explain your reasoning clearly.
Checkpoint 2: Area and volume	You will complete a skills check You will be reassessed during the Mastery lesson	Students will develop practical skills in area and volume. They will learn to calculate the area of 2D shapes and the surface area and volume of 3D solids, using formulas and units accurately. They will also apply these skills to real-life problems, developing confidence in measurement, spatial reasoning and problem solving.
Checkpoint 3: Similarity and congruence	You will complete a skills check You will be reassessed during the Mastery lesson	Students will develop their understanding of similarity and congruence by comparing shapes and recognising their mathematical relationships. They will use scale factors to find missing measurements in similar shapes and apply geometric rules to determine when shapes are congruent, developing their reasoning and problem-solving skills.

Milestone assessment:
The average of the following skills checks :
Sequences: Understand and use algebraic notation; Equality and equivalence

Vocab quiz:	**Knowledge tasks:**	**Disciplinary tasks:**
Intercept Gradient Equation Factor Expand	Students will develop practical skills in ratio, proportion and geometry. They will learn to use ratios and scale factors in everyday situations, calculate perimeter, area and volume, and use appropriate formulas and units accurately. They will also explore congruence and similarity, learning how to compare shapes, find missing measurements and explain their mathematical reasoning clearly.	Students will develop practical skills in ratio, proportion, measurement and geometry. They will learn to use ratios and scale factors in real-life situations, calculate perimeter, area and volume accurately, and work confidently with units and formulas. They will also explore congruence and similarity, helping them compare shapes, find missing measurements and explain their mathematical reasoning 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

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