

Scheme of Learning: Year 9 Autumn Term

Topic Sequence: Reasoning with Algebra

1	2	3
Straight Line Graphs	Forming and Solving Equations	Testing Conjectures

Topic Overview: Forming & Solving Equations

During this topic, students will revisit and extend their knowledge of forming and solving linear equations / inequalities, which builds upon and supports other areas of the curriculum. Students will also explore rearranging formulae and this links to solving equations and reinforcing the difference between equations, formulae, identities and expressions.

Learning Sequence:

One and Two-step Equations / Inequalities (R)

Students will revisit key ideas of equations and inequalities before looking at complex examples, starting to solve one- and two-step equations.. This will help remedy any common misconceptions to enable students to extend their knowledge.

Equations / Inequalities with brackets (R)

Building upon students knowledge of solving equations, this topic has equations with brackets, which can result in non integer answers, allowing pupils to learn how they can use fractions to express the answer.

Inequalities with negative numbers

Students will explore the effects of multiplying and dividing inequalities with negative numbers. Students will compare and contrast solving equations to solving inequalities. Students can also use their skills of substitution or number lines to verify their answers.

Solve Equations with unknowns on both sides

Students will be confident using the 'balance' method to solve equations / inequalities and now will focus on solving equations with unknowns on both sides. Bar models will be shown along side standard method to help reinforce the process to solve equations.

Solve Inequalities with unknowns on both sides

Students will build upon their knowledge of solving equations on both sides and apply it to solving inequalities with unknowns on both sides.

Equations / Inequalities in other mathematical contexts

Students will use their skills at forming and solving equations in different contexts, visiting topics such as probability, averages, angles, area and perimeter with unknowns.

Formulae and Equations

Students will now explore the difference between formulae and equations, substituting values into formulae to produce solvable equations. The concept of subject of the formulae will be introduced as this is needed for future steps in the topic, by showing students formulae they have used before such as area of a triangle.

Rearrange formulae (one-step)

Here students will explore the link between solving one-step equations and rearranging one-step formulae, using previously learnt methods to answer question.

Rearrange (two-step)

Building upon the previous step, students will begin to look at more complex formulae, and students can revisit and build upon what they learnt on straight line graphs and the $y = mx + c$, learning how it can be rearrange to help find the gradient and y-intercept.

Rearrange complex formulae (H)

This final step looks at more complex rearrangement that will involve multiple steps. Look at formulae which contain brackets or require squaring / square rooting to rearrange.

Sequence of Learning:

1	One and Two-step Equations / Inequalities (R)
2	Equations / Inequalities with brackets (R)
3	Inequalities with negative numbers
4	Solve Equations with unknowns on both sides
5	Solve Inequalities with unknowns on both sides
6	Equations / Inequalities in other mathematical contexts
7	Formulae and Equations
8	Rearrange formulae (one-step)
9	Rearrange (two-step)
10	Rearrange complex formulae (H)

Topic Resources:

Knowledge Maps:	Algebraic Manipulation and Notation Solving Linear Equations
Assessment	
Knowledge:	End of Topic test
Application of Knowledge:	Termly mixed topic assessment
Supportive Reading:	
	Sparx Maths www.sparxmaths.co.uk
	Corbett Maths : www.corbettmaths.com
	AQA Revision Guide