

Scheme of Learning: Year 10 Summer Term

Topic Sequence: Developing Algebra

3	4
Equations and Inequalities	Simultaneous Equations

Topic Overview:

This unit revisits and reinforces techniques visited previously and deepens understanding of the topic of equations and also inequalities. Students look at the difference between equations and inequalities and establish the difference between a solution and a solution set and also explore how number lines and graphs can be used to represent the solutions to inequalities. The content covers consolidating algebraic capability from KS3 and extending understanding of algebraic simplification and manipulation to include quadratic expressions. Also, translating simple situations or procedures into algebraic expressions or formulae; deriving equations, solving equations and interpreting solutions, selecting appropriate concepts, methods and techniques to apply to unfamiliar and non-routine problems; interpreting solutions in context of the problem. Factorising quadratics to solve equations is covered here in the Higher tier

Learning Sequence:

Understand the meaning of a solution: Students consider what the meaning of a solution is and how they can represent this, using substitution to check a solution. They also consider how many solution an equation could have through reasoning about different types of equations as well as why an expression would have no solution

Form and solve one-step and two-step equations and inequalities: (R)

In this step, students revise forming and solving equations and then link this to inequalities and their solutions

Show solutions to inequalities on a number line and interpreting representations on number lines as inequalities: Students see how to represent inequalities on a number line and interpret the meaning of a given number line representation and put into inequality format

Represent solutions to inequalities using set notation (H):

Students make links between the number line representation, the verbal description and formal set notation.

Draw straight line graphs (R): This review step reminds students how to draw linear graphs making connections between representations as a graph, an equation, a table of values and a set of coordinates

Find solutions to equations using straight line graphs: Students learn the connection between solving algebraically and solving graphically. Students revisit plotting straight line graphs and how the solution of a linear equation corresponds to where two graphs meet.

Single and multiple inequalities on a graph (H):

Students visit the convention of graphing inequalities and shading regions described by inequalities

Form and solve complex equations and inequalities: Students now solve equations and inequalities with unknowns on both sides and where brackets may be present on one or both sides and /or more challenging contexts.

Quadratics using factorisation (H):

Students recap previous work on factorising quadratics

Quadratic inequalities (H): Students need to identify which region is to be shaded to represent an inequality and use factorisation to do this

Equations / inequalities from shapes

Students should be confident in forming as well as solving equations, and this step used shape as a context to support this. Students can check answers by substituting solutions back in to the original problem as well as in the equation or inequality

Sequence of Learning:		Topic Resources:	
1	Understand the meaning of a solution	Knowledge Maps:	Algebraic notation and manipulation Linear Graphs Solving Linear Equations Inequalities
2	Form and solve one and two step equations and inequalities		
3	Show solutions to inequalities on a number line and interpret representations on number lines as inequalities		
4	Represent solutions to inequalities using set notation (H)		
		Assessment:	
5	Draw straight line graphs (R)	Knowledge:	2x 20 mark end of topic assessment
6	Find solutions to equations using straight line graphs	Application of Knowledge:	Termly summative assessment
7	Single and multiple inequalities on a graph (H)	Supportive Reading:	
8	Form and solve complex equations and inequalities	Any supported reading listed here	Sparx Maths www.sparxmaths.co.uk
9	Quadratics using factorisation (H)		
10	Quadratic inequalities (H)		Corbett Maths : www.corbettmaths.com
11	Equations / inequalities from shapes		AQA Revision Guide