Scheme of Learning: Year 10 Summer Term

Topic Sequence: Algebra

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Manipulating Expressions

Topic Overview:

This section builds on the Autumn term learning of equations and inequalities, providing revision and reinforcement for Foundation tier students and an introduction to algebraic fractions for those following the Higher tier. Algebraic argument and proof are considered, starting with identities and moving on to consider generalised number

Learning Sequence:

Simplify expressions: Students should be secure in simplifying expressions using addition, subtraction, multiplication and division. As well as revising like and unlike simple terms.

Use identities: This step ensures students understand the difference between equality and equivalence. Students consider that in an identity, the coefficients of each variable can be compared to finding missing values. Students need to be confident with expanding single brackets

Add and subtract algebraic fractions: (H) Students recap their knowledge of adding and subtracting fractions and apply to algebraic fractions, exploring fractions with numerators and denominators involving more than a single term, being confident with single bracket expansion and dealing with negative numbers

Multiply and divide algebraic fractions: (H)
Students consider simplifying fractions by cancelling in this step and apply knowledge of multiplying and dividing fractions algebraically

Form and solve equations and inequalities with fractions:
Students build on previous work solving equations and inequalities and extend it using fractions and equations with fractions with algebraic denominators

Solve equations with algebraic fractions: (H)
This step explores equations and inequalities that reduce to linear form. Only quadratics that can factorise are covered

Represent numbers algebraically:
Students extend previous knowledge on representing numbers in general form and here understanding of even numbers (eg 2n) and odd numbers (eg 2n + 1) written algebraically is explored

Algebraic arguments and proof: The idea of prove is introduced through simple developing of arguments and /or the use of counterexamples. More formal proof is dealt with in Year 11.

Expand binomials: Here we revisit the meaning of binomial and quadratic, whilst discussing how to expand binomials. Students will need to be confident with simplification and dealing with negative numbers.

Factorise quadratic expressions: Here students need to link finding factors with factorization. Students should understand that a quadratic expression has a maximum of two binomial factors. Students consider how the factors of constant terms relate to the coefficient of the x term. Finally, students should factorise quadratics with negative x terms or a negative constant.

Sequence of Learning:	
1	Simplify expressions
2	Use Identities
3	Add and subtract algebraic fractions (H)
4	Multiply and divide algebraic fractions (H)
5	Form and solve equations and inequalities with fractions
6	Solve equations with algebraic fractions (H)
7	Represent numbers algebraically
8	Algebraic arguments and proof
9	*Expand binomials*
10	*Factorise quadratic expressions*

Topic Resources:	
Knowledge Maps:	Notation and manipulation Solving linear equations Solving quadratic equations Multiples, primes and factors Fractions

Assessment:	
Knowledge:	2x 20 mark end of topic assessment
Application of Knowledge:	Termly summative assessment

Supportive Reading:	
Any supported reading listed here	Sparx Maths www.sparxmaths.co.uk
	Corbett Maths : www.corbettmaths.com
	AQA Revision Guide