KEVICC Key Stage 3 Curriculum Subject: Mathematics

Autumn Half-Term 1 Algebraic Thinking

Term: Year 7 Autumn Term – Block Three | **Topic:** Equality & Equivalence

What is the essential knowledge from this unit?
What do students need to remember and understand?

Students are introduced to forming and solving one-step linear equations, building on their study of inverse operations. The equations met will mainly require the use of a calculator, both to develop their skills and to ensure understanding of how to solve equations rather than spotting solutions. This work will be developed when two-step equations are met in the next place value unit and throughout the course. The unit finishes within consideration of equivalence and the difference between tis and equality, illustrated through collecting like terms.

National curriculum content covered:

- Use algebra to generalise the structure of arithmetic, including to formulate mathematical relationships.
- Simplify and manipulate algebraic expressions to maintain equivalence by collecting like terms.
- Use approximation through rounding to estimate answers.
- Use algebraic methods to solve linear equations in one variable.

We know that breaking the curriculum down into small manageable steps should help students to understand concepts better. As a result, for each block of content in the scheme of learning we have provided the following 'small step' breakdown for this unit as follows:

Lesson One - Understand the meaning of equality
Lesson Two - Understand and use fact families, numerically and algebraically
Lesson Three - Solve one-step linear equations involving +/- using inverse operations
Lesson Four - Solve one-step linear equations involving x/÷ using inverse operations
Lesson Five - Understand the meaning of like and unlike terms
Lesson Six - Understand the meaning of equivalence
Lesson Seven - Simplify algebraic expressions by collecting like terms, using the ≡ symbol

Key Vocabulary and notation.

Equality	Term
Equation	Like
Equals	Unlike
Is equal to	Coefficient
Fact family	Index
Bar model	Expression
Solve	Equivalent
Solution	Simplify
Unknown	Collect
Inverse	

≡

Mathematical questioning should be designed to unpick the structure of the maths and deepen the student's understanding. When students talk about mathematical concepts, they should develop the vital mathematical language that helps them explain their ideas fully.

Students are expected and encouraged to use terminology during all discussions, verbal feedback and in written content.

What prior learning supports understanding of this content?

- Perform mental calculations involving addition, subtraction, multiplication and division.
- Use simple formulae.
- Express missing number problems algebraically.
- Find pairs of numbers that satisfy an equation with two unknowns.

How does this content link to future learning?

- Expand, and factorise into, single brackets.
- Form and use expressions, formulae and identities.
- Form and solve equations and inequalities with and without brackets.
- Distinguish between equations, expressions, formulae and identities.

Reading: *Where in the unit are students supported to read complex academic text?*

- Reading and understanding mathematical questions and problems' – teacher input.
- Decoding complex examination questions - explain what they are asking the student to do' – teacher input.
- Following instructions to solve problems - break down the tasks – teacher input.
- Recognising terminology, numbers, and symbols.
- Recognising patterns and relationships in mathematics.

Writing: *Independent writing tasks and how they are structured*

- Using the correct subject specific terminology for numbers and symbols – examination papers, class books.
- Responding to questions that ask for an explanation or a reason – examination papers, class books.
- Self-evaluation, reviewing, reflecting and analysis of own work –, class books, personalised learning checklists and analysis.
- Creating notes that can be used later for revision purposes - class books, revision cards, mind maps etc.

Key assessments:
How will students review the information learned?
End of block assessments.
End of block assessments provide a quick progress check at the end of each block of learning to make sure students have understood the content covered.
A Core paper – it is envisaged that all students will take this paper, to provide a direct comparison with the performance of the rest of the cohort. All topics from each term will be covered, and the use of a calculator is expected.
End of term assessments.
A Foundation paper – students who are working below national expectations will have the opportunity to show their understanding of the material with more straightforward questions. Non calculator paper.
A Higher paper – students who are working at or above national expectations will have the opportunity to tackle more challenging questions on the same material, plus the extra objectives indicated as "Higher" in our scheme of learning. Non calculator paper.
How will feedback be seen?
Marked end of block and term assessments.
Personalised learning checklists for end of term assessments identifying strengths and areas of development.
Written teacher feedback and marking in compliance with faculty and College Marking Policies. Student responses to marking.
Students self-mark using purple pen. Verbal feedback given every lesson from teacher and peers as appropriate.
Teacher and student self-assessment of presentation of class books will be completed to ensure written work is of high standard and students are achieving their potential.