

KEVICC Key Stage 3 Curriculum Subject: Mathematics		Key Vocabulary and notation.																																																									
Spring Half-Term 2 Directed Number and Fractional Thinking																																																											
Term: Year 7 Spring Term – Block Five		Topic: Fractional Thinking																																																									
<p>What is the essential knowledge from this unit? What do students need to remember and understand?</p> <p>This block builds on the Autumn term work of 'key' fractions, decimals and percentages. It will provide more experience of equivalence of fractions with any denominators, and to introduce the addition and subtraction of fractions. Bar models and concrete representations will be used extensively to support this. Adding fractions with the same denominators will lead to further exploration of fractions greater than one, and for the core strand adding and subtracting with different denominators will be restricted to cases where one is a multiple of the other.</p> <p>National curriculum content covered:</p> <ul style="list-style-type: none"> Move freely between different numerical representations (for example, equivalent fractions, fractions and decimals). Express one quantity as a fraction of another, where the fraction is less than 1 and greater than 1. Order positive and negative integers, decimals and fractions; use the number line as a model for ordering of the real numbers; use the symbols =, ≠, ≤, ≥ Select and use appropriate calculation strategies to solve increasingly complex problems Use the four operations, including formal written methods, applied to integers, decimals, proper and improper fractions, and mixed numbers, all both positive and negative. Work interchangeably with terminating decimals and their corresponding fractions <p>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:</p> <p>Lesson One - Understand representations of fractions Lesson Two - Convert between mixed numbers and fractions Lesson Three - Add and subtract unit fractions with the same denominator Lesson Four - Add and subtract fractions with the same denominator Lesson Five - Add and subtract fractions from integers expressing the answer as a single fraction Lesson Six - Understand and use equivalent fractions Lesson Seven - Add and subtract fractions where denominators share a simple common multiple Lesson Eight - Add and subtract fractions with any denominator Lesson Nine - Add and subtract improper fractions and mixed numbers Lesson Ten - Use fractions in algebraic contexts Lesson Eleven - Use equivalence to add and subtract decimals and fractions Lesson Twelve - Add and subtract simple algebraic fractions (H)</p> <p>Interleaving/Extension of previous work</p> <ul style="list-style-type: none"> Finding the range and the median. Substitution into algebraic formulae. Forming and solving linear equations, including two-step equations. 		<table border="0"> <tr> <td>Equal parts</td> <td>Common</td> </tr> <tr> <td>Congruent</td> <td>denominator</td> </tr> <tr> <td>Divide</td> <td>Commutative</td> </tr> <tr> <td>Denominator</td> <td>Mixed</td> </tr> <tr> <td>Numerator</td> <td>number</td> </tr> <tr> <td>Ascending</td> <td>Improper</td> </tr> <tr> <td>Descending</td> <td>fraction</td> </tr> <tr> <td>Smaller/bigger than</td> <td>Sequence</td> </tr> <tr> <td>Greater/less than</td> <td>Substitute</td> </tr> <tr> <td>Positive</td> <td>Solve</td> </tr> <tr> <td>Negative</td> <td>Equation</td> </tr> <tr> <td>Unit fraction</td> <td>Linear</td> </tr> <tr> <td>Equal parts</td> <td>Geometric</td> </tr> <tr> <td>Whole</td> <td>Inverse</td> </tr> <tr> <td>Multiple</td> <td>Expression</td> </tr> <tr> <td>Mixed number</td> <td>Place value</td> </tr> <tr> <td>Addition</td> <td>Tenths</td> </tr> <tr> <td>Subtraction</td> <td>Hundredths</td> </tr> <tr> <td>Integer</td> <td>Place value</td> </tr> <tr> <td>Partition</td> <td>Simplify</td> </tr> <tr> <td>Subtract</td> <td>Like terms</td> </tr> <tr> <td>Equivalent</td> <td>Collect</td> </tr> <tr> <td>Lowest</td> <td>In terms of</td> </tr> <tr> <td>Common</td> <td></td> </tr> <tr> <td>Multiple</td> <td></td> </tr> </table> <table border="0"> <tr> <td>=</td> <td>></td> </tr> <tr> <td>≠</td> <td>≤</td> </tr> <tr> <td><</td> <td>≥</td> </tr> </table> <p>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.</p> <p>Students are expected and encouraged to use terminology during all discussions, verbal feedback and in written content.</p>		Equal parts	Common	Congruent	denominator	Divide	Commutative	Denominator	Mixed	Numerator	number	Ascending	Improper	Descending	fraction	Smaller/bigger than	Sequence	Greater/less than	Substitute	Positive	Solve	Negative	Equation	Unit fraction	Linear	Equal parts	Geometric	Whole	Inverse	Multiple	Expression	Mixed number	Place value	Addition	Tenths	Subtraction	Hundredths	Integer	Place value	Partition	Simplify	Subtract	Like terms	Equivalent	Collect	Lowest	In terms of	Common		Multiple		=	>	≠	≤	<	≥
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<p>What prior learning supports understanding of this content?</p> <ul style="list-style-type: none"> Use mental and formal written methods of addition with integers and decimals. Find simple fractions and percentages of amounts. Workout simple fractions and percentages and percentages of amounts with and without a calculator. Represent tenths and hundredths on diagrams and number lines. Convert between mixed numbers and improper fractions. Add and subtract fractions with the same denominator, one denominator a multiple of the other, different denominators. 	<p>How does this content link to future learning?</p> <ul style="list-style-type: none"> Multiply and divide a fraction by an integer. Multiply and divide a fraction by a fraction. Understand and use the reciprocal. Develop understanding of fractions, decimals and percentages. Evaluate percentage increase and decreases. Use multipliers to solve percentage problems. Express one number as a percentage of another. 																																																										
<p>Reading: <i>Where in the unit are students supported to read complex academic text?</i></p> <ul style="list-style-type: none"> 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. 	<p>Writing: <i>Independent writing tasks and how they are structured</i></p> <ul style="list-style-type: none"> 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.