

HIAS MOODLE+ RESOURCE

Year 8 Unit Plan 8.1

Autumn Term

HIAS Maths Team
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Final Version

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Overview

In this document

Year 8 Unit Plans linked to Medium Term Overview

Points to consider when using this resource

These unit plans provide an example of how medium term planning could be developed into units of work. These unit plans will need to be adapted to meet the needs of students. The unit plan provides an outline of a possible learning journey with suggestions of types of tasks that could be used. They also identify key prior learning; some common misconceptions and an indication of key skills students need to develop towards competency. It is assumed that teachers will make use of appropriate mathematical representations (manipulatives, visuals and symbolic) to support conceptual understanding for students alongside procedural fluency.

Year 8 Unit 8.1 – Number: place value, fractions, directed number and prime numbers

This unit is about decimals, fractions and directed number. Students will develop their understanding place value of decimals and apply this to the four operations. They will also apply the four operations to fractions and directed number. Students will build on previous of knowledge of negative numbers in context. Prime numbers will be explored in the context of factorisation.

Session	Unit Objectives	Types of task
1-5	<ul style="list-style-type: none"> • Understand and use place value for decimals, measures and integers of any size. • Use four operations, applied to decimals in the context of measure 	<p>Use the dienes, one thousand block, to model one thousandth and the link to hundredths and tenths. Partition numbers less than one with zero as a place value holder to support ordering decimals.</p> <p>Use place value tables to support multiplying and dividing by powers of ten.</p> <p>Problem solving activities that use measures as a context and require numbers to be changes to a common unit of measure.</p> <p>Key facts focus: Identify digits by their place value and develop a sense of number, particularly the 'size', or magnitude of number when calculating.</p> <p>Know metric conversions and apply to multiplying decimals by powers of ten.</p>
6-10	<ul style="list-style-type: none"> • Use four operations, applied to proper and improper fractions, and mixed numbers • Interpret fractions and percentages as operators 	<p>Types of task</p> <p>Use common misconceptions, in a true/false scenario, as a starting point to support discussion as to methods for four operations with fractions.</p> <p>Problem solving activities that include fraction and percentages of quantities.</p> <p>Key facts focus: Find the lowest common denominator when adding and subtracting fractions</p> <p>Use bar modelling to find fraction and percentages of quantities</p>

11-15	<ul style="list-style-type: none"> • Use four operations, applied to positive and negative numbers • Express numbers as products of primes • Use prime factorisation, including using product notation and the unique factorisation property 	Types of task
		Use number lines that extend to negative numbers to ensure: understanding of the number system; that +x and – x are the same distance from zero; and the direction of movement along the number line when adding / subtracting positive numbers.
		Explore pattern to establish the effects of adding a negative number; subtracting a negative number; multiplying/dividing a positive and negative number; multiplying/dividing a negative and negative number.
		Explore how to multiply by using factors of each number rather than by partitioning Eg. $27 \times 3 = (9 \times 3) \times 3 = 9 \times (3 \times 3) = 9 \times 9 = 81$
		Key facts focus: Commutative and associative law

Check and refresh	Watch out for	Building fluency
<p>Multiplying and dividing decimal numbers by 10 and 100.</p> <p>Know metric conversions.</p> <p>Understanding of ‘a whole’ and addition / subtraction facts that link to a whole in the context of fractions. E.g. $\frac{5}{7} + \frac{2}{7} = 1$ $1 - \frac{5}{7} = \frac{2}{7}$</p> <p>Finding multiples and factors of two or more numbers.</p> <p>Bar modelling to find simple fractional and percentages of an amount</p> <p>Add and subtract across zero.</p> <p>Know prime numbers up to 30.</p> <p>Know that product links to multiplication.</p>	<p>When multiplying and dividing by powers of ten students may use the language of ‘adding / taking away zeros’. This needs to be addressed to ensure manipulation with decimals is understood.</p> <p>Students may not use the most efficient equivalent fractions when adding and subtracting fractions. Students may need practice at finding the lowest common denominator and need the link to the lowest common multiple of a set of numbers modelled to them.</p> <p>Students being able to calculate a unit fraction of an amount, and not being able to apply this to non-unit fractions.</p> <p>Misapplication of directed number rules to calculations like: $-6 - 7$, giving an answer of 13, rather than -13.</p>	<p>Multiplying and dividing decimal numbers by 1000</p> <p>Convert between improper and mixed numbers using number knowledge rather than relying on diagrams.</p> <p>Secure method for calculating non-unit fractions of a quantity.</p> <p>Express numbers as a product of its factors</p>

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