Hampshire Services
HIAS SCHOOL IMPROVEMENT

HIAS MOODLE+ RESOURCE

Year 7 Unit Plan: 7.1

Autumn Term

HIAS Maths Team
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Final Version

Hampshire County Council

www.hants.gov.uk

Overview

In this document

Year 7 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 7 Unit 7.1 – Algebra

This unit is about basic algebraic protocols and techniques. It includes algebraic notation, simplifying and manipulating expressions and introducing arithmetic sequences defined by both term-to-term and position-to-term rules

<table>
<tr><th>Session</th><th>Unit Objectives</th><th>Types of task</th></tr>
<tr><td rowspan="2">1-5</td><td rowspan="2">Use and interpret algebraic notation including: ab in place of a x b, 3y in place of y + y + y and 3 x y, a2 in place of a x a, a3 in place of a x a x a, a2 b in place of a x a x b, a/b in place of a ÷ b and the correct use of brackets.
Understand and use the concepts and vocabulary of expressions, equations, inequalities, terms and factors.
Simplify and manipulate algebraic expressions to maintain equivalence by collecting like terms and multiplying a single term over a bracket.</td><td>Card matching activities to show equivalent expressions such as a^2 = a x a and 2a = a + a

Geometric expressions to collect like terms: e.g. perimeter of a square with side lengths a can be written as 4a or a+a+a+a and perimeter of a rectangle of side lengths a and b can be written as a+b+a+b or 2a + 2b or 2(a+b)

Counters (with x and y on) or bar-modelling to build up two equivalent expressions e.g. 3 x + 4 = 13

‘Tactiles’</td></tr>
<tr><td>Key facts focus:
Laws of arithmetic and how they apply to algebraic conventions:
Commutative, distributive and associative laws linked to ‘BIDMAS’.</td></tr>
<tr><td rowspan="2">6-10</td><td rowspan="2">Recognise arithmetic sequences
Generate terms of a sequence from a term-to-term rule
Introduce position-to-term rules for simple arithmetic sequences, linked to multiplication tables</td><td>Types of task</td></tr>
<tr><td>Missing number problems using pattern spotting

Exploring times tables and ‘off-multiples’ such as the three times table (3n) = 3,6,9,12,… and one more than the three times table (3n+1) = 4,7, 10,13…..

Which sequence is the odd one out?
2,4,6,8….
2,5,8,11….
3,5,7,9….
Notice the start number as well as the step count.

Geometric patterns to generate sequences such as matchsticks as triangles etc.</td></tr>
</table>

		Key facts focus: Identify multiples and factors Be able to step count from any number. Recognise an arithmetic sequence is a linear progression.

Check and refresh	**Watch out for…**	**Building fluency**
Laws of arithmetic using BIDMAS Different ways to record the same fact (e.g. 3 x 7 = 3 (3 + 4) = 3 x 3 + 3 x 4) Basic calculations with negative numbers using a number-line as appropriate . Describe number and shape patterns Basic indices (e.g.know that 3^3 = 3 x 3 x3)	Ensure that protocols are consolidated so that there is a common language. For example, don't allow students to use capital letters as these are reserved for labelling vertices. Arithmetic with negative numbers. Be aware that students will not necessarily have done very much of this in primary apart from in context (number-line and temperature) Misconceptions such as $2a = 2^2 = a + 2$	Squaring and cubing numbers Factors of numbers Addition and subtraction that result in negative numbers

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